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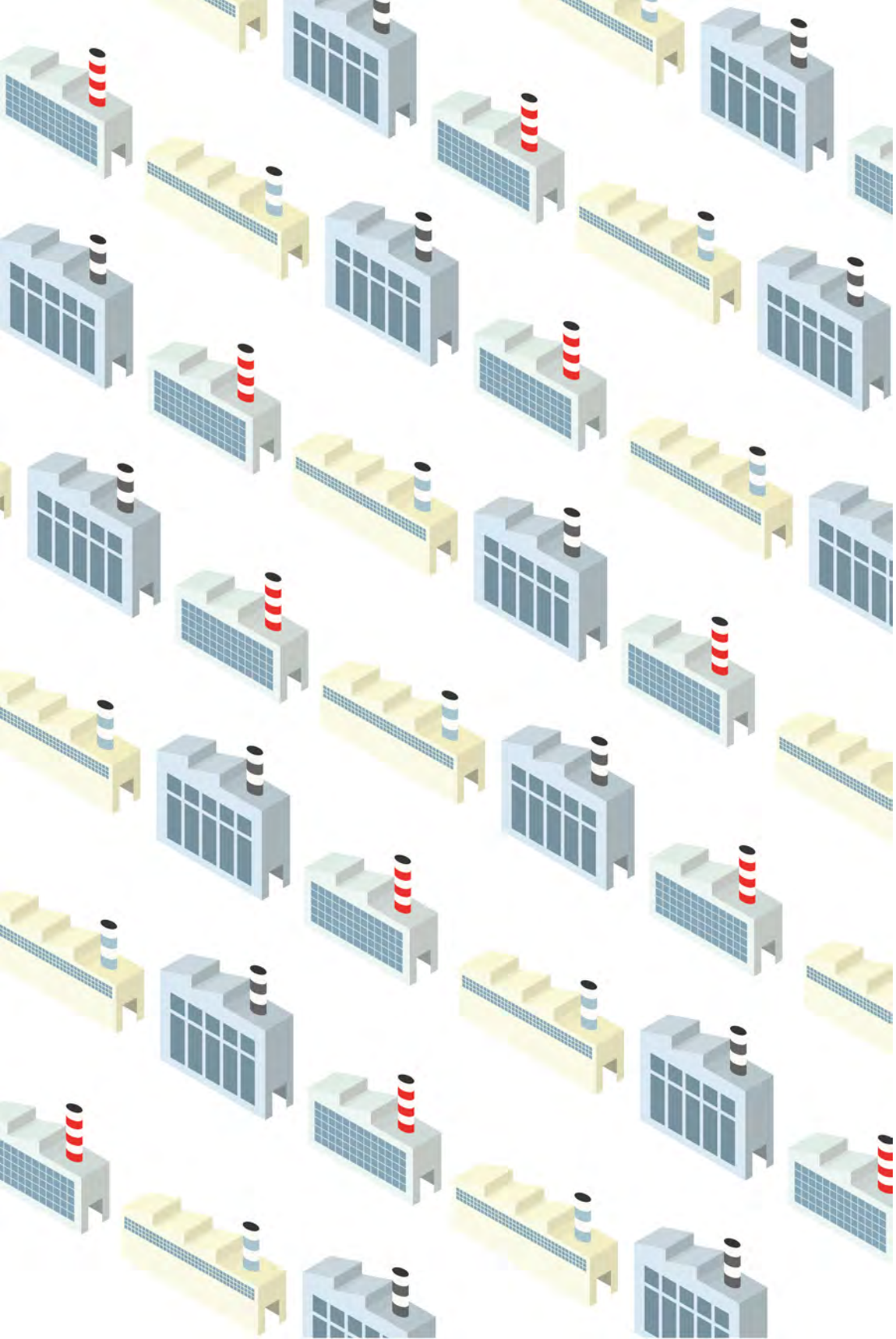
THE LANDSCAPE OF INDUSTRIAL SPECTACLE

REVIVING PUBLIC INTEREST IN PRODUCTION

THE LANDSCAPE OF INDUSTRIAL SPECTACLE

REVIVING PUBLIC INTEREST IN PRODUCTION

WILLIAM MANN



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INTRODUCTION

Image 0.1 An abandoned factory in Albany, NY. Source: "From Redesigning Cities to Industrial Ruins," *Nowtopian*

Derelict, crumbling, abandoned and dying. That is how the current state of American manufacturing is often described. A newfound fascination with contemporary ruins has painted the bleak narrative that American manufacturing is all but dead, the result of a natural shift; the organic decay of an inevitably doomed system of capital production. Numerous images of dilapidated and overgrown factories of America's past (*Image 0.1*) coupled with an overabundance of "Made in China" stickers boldly proclaims, "Goods are no longer produced on American soil!" It has become common fodder to accept the country's shift to a finance and service based economy while increasingly globalized markets have allowed for the production of physical goods—things you can drop on your foot—to occur elsewhere. However, a problem arises when considering that we consume more "things" than any other country in the world—we consumed $5.8 trillion worth of manufactured goods in 2008—and seemingly have no desire to know where any of those "things" come from.[1]

The belief that goods are no longer produced within our own country has created a mental barrier between us and the modes of production. America today is unequivocally a consumer culture with little regard for how or where goods come from, as the spectacles of consumption have overrun any desire to better understand

1 Joel Popkin and Kathryn Kobe, Manufacturing Resurgence: A Must for U.S. Prosperity (2010), prepared for the National Association of Manufacturers (NAM), 3.

the products we consume.[2] The typical narrative that American manufacturing has naturally decayed at the hands of globalization has established a self-justified conviction that we should no longer have any input or concern with the manufacturing process.

A culture once filled with detailed repair manuals and pride in our durable "American-made products," has become one obsessed with a throw-away consumerism more concerned with what is coming out next than figuring out how to work the things we already have. Yet, turn on any television, do a bit of channel surfing, and you are bound to find programs along the lines of "How it's Made," "Factory Made," or the "DIY Network." Such shows signify that there is an existing interest within people to understand how things are made and how they work. Despite a self-perceived distance between us and our goods, we are still fascinated by their production.

The tragic irony in all this is that many of these goods are still being produced in our own backyards. America still possesses the world's largest manufacturing economy worth over $1.6 trillion as recently as 2009.[3] To put that in perspective, if United States' manufacturing were a country by itself, it would be the eighth largest economy in the world.[4] By no means does that seem like a dead or dying economy. Yet, these industrial landscapes of production,

2 David Harvey, "Flexible Accumulation through Urbanization Reflections on 'Post Modernism' in the American City," Perspecta, Vol.26 (1990), pp. 251-272.
3 Source: Bureau of Economic Analysis
4 The Manufacturing Institute, "The Facts About Modern Manufacturing," 8th Edition 2009, 2.

while often located near urban centers, remain widely unexplored by the general public. There are no tourists lining up to visit the world's second busiest container port in Long Beach California, the Boeing factory in Washington, or the various metal fabricators in Pennsylvania. Clouded by the belief that these are secondary sources of goods and capital, the industrial landscapes tend to lie un-admired in plain sight, as public fascination has become more concerned with the spectacles of consumption rather than the technological innovations of production. The landscapes themselves play an equal role in creating distance from public domain. Hiding behind the abundant photographs and documentaries of abandoned industrial landscapes, the thousands of functioning manufacturing establishments are exteriorly composed of utilitarian and drab materials that do little to provoke public interest. The structures themselves, along with the activities they contain, warn the public to stay out rather than to invite them in.

In their current form, the landscapes of industrial production have little, if any, public appeal. However, what would be the advantages of evoking spectacle in such landscapes? Are there reciprocal advantages to eliciting a symbiotic relationship between the public and the landscapes of industrial production? There are some small-scale precedents for the evocation of spectacle in production, such as the souvenir "Penny-Press" and "Mold-A-Rama" machines (*Image 0.2*). These small souvenir machines can be found

with children gathered around them at most amusement parks, zoos, and museums. Inherent in them is an attempt to cultivate spectacle in material production. As I stand before the Penny-Pres machine, I watch as an intricate set of cogs and gears slowly transforms my penny from a small copper piece of currency into a shiny, slim, and unique medallion. Or, for only a few dollars I can watch as the Mold-A-Rama takes a solid cube of wax, super heats it, pours it into a metal mold, applies pressure and cools it before it is ejected into my hands as a small wax figurine. In both cases I am amazed as I watch raw material transform into a unique manufactured good right before my eyes.

What if these (admittedly) small-scale efforts to bring spectacle to manufacturing were translated into a larger framework, resulting in the creation of a new hybrid landscape: *the landscape of industrial spectacle*. Part functioning industrial district, part public amusement park, the new amalgamated typology seeks direct engagement between the general public and methods of production. Through spectacularized program and juxtaposition, consumers are drawn directly to the sites of production where, not only do they see and learn how their goods are made, but they play an intricate role in the production of capital. A brief retreat to the landscape of industrial spectacle illuminates previously invisible flows of capital.[5] The formerly ignored manufacturing sector becomes a vibrant

5 David Harvey, "Money, Time, Space, and the City," in The Urban Experience (Baltimore: Johns Hopkins University Press, 1989), 165-199.

Image 0.2 The small-scale evocation of the "spectacle of production" as seen in the "Penny-Press" and "Mold-A-Rama" machines.

and culturally relevant event. The reationship between production and consumption is transformed from a disjointed parasite to a cooperative symbiosis, as the new landscape instills a sense of pride in manufactured goods. The production process itself becomes a commodity; a visual and cultural event that citizens want to consume.

While certainly utopian in its vision, the nature of the landscape of industrial spectacle is rooted in a simple question: how can we re-imagine manufacturing, not as an invisible process that takes place behind a closed curtain, but as a fascinating and awe-inspiring public amenity? The following chapters try to answer this question. Chapter one addresses the fact that despite an apparent shift away from American manufacturing, the data shows that it is still indeed an important source of economic ouput and domestic employment.[6] Chapter two attempts to better understand the manufacturing statistics by placing them in the context of economic history, specifically the shift in regimes of capital accumulation that occured in the early 70s. The third chapter looks at the landscapes of production themselves in an effort to better understand what they look like, how they operate and why they are so widely unexplored. Finally, the fourth chapter provides a hyperbolic example of what the landscape of industrial spectacle could be if it were realized as the imaginary landscape of "Industria." Even though the premise of Industria may seem ridiculous at first, its fundamental tenets

6 Manfacturing industries produced $1.585 trillion in 2009 and employed 12.2 million in 2012. (source: Bureau of Economic Analysis)

aren't too farfetched, as places like BMW Welt in Munich, Germany provide evidence that the theories behind the landscape of industrial spectacle may have a very real application.

1: THE CURRENT STATE OF AMERICAN MANUFACTURING

The plethora of images depicting abandoned and overgrown factories present a skewed narrative of the current state of America's manufacturing economy. Posing as evidence of an inevitable casualty, the verbose images only depict one side of a fluctuating system of capital accumulation. For every rundown, desolate industrial ruin, there is the untold story of new structures and industries (new forms of life) that arise to take their place.[1] There is a popular understanding that American manufacturing has been in decline for decades and that it is, for all intents and purposes, dead. Jobs have been outsourced and factories have shut down. Since the 1970s, cities have experienced an unprecedented wave of deindustrialization that has rendered the industrial economy as invisible to an increasing number of people.

It is indeed true that manufacturing has changed in some important ways. It clearly plays a different and less prominent role in America's economy than it once did. There are, for example 33 percent fewer manufacturing jobs in the US today than there were in 1987.[2] Additionally, while manufacturing output has grown over the past twenty-five years, it has grown at a slower rate than the rest of the economy and has declined from 21 percent of total GDP in

1 Typical of the destructive nature of capital inherent in a regime of Flexible Accumulation where economic success depends on the ability of capital to create new landscapes in its own image while simultaneously rendering its previous landscapes obsolete. (Harvey, "Money, Time, Space, and the City": 182)
2 James Sherk, "Technology Explains Drop in Manufacturing Jobs," Backgrounder, No.2476 (Oct. 12, 2010), Published by the Heritage Foundation, 5.

1980 to 11 percent in 2009.[3] However, acknowledging that American manufacturing is in decline is entirely different than proclaiming it as "dead" or irrelevant.

Despite the transition from Fordism to a globalized regime of Flexible Accumulation, the vast deindustrialization of urban centers and its empirical decline, American manufacturing remains important. It is still the largest manufacturing economy in the world, with a total output of $1.585 trillion representing 11 percent of total GDP, undoubtedly a formidable chunk of the country's economy.[4] [5] Its only close competition is China's manufacturing economy, which hovers around $1.5 trillion.[6] Operating in an age of "Made in China" stickers and continual outsourcing, American manufacturers remain a dominant force in the globalized industrial economy. As recently as 2008, US manufacturers exported a total of $1.04 trillion worth of goods, accounting for 57 percent of the country's total exports.[7]

Manufacturing also boasts the largest 'backward linkage' of any other major sector of the American economy.[8] Meaning that growth

3 John Hunter, "Manufacturing Output as a Percent of GDP by Country," June 28, 2010: http://investing.curiouscatblog.net/2010/06/28/manufacturing-output-as-a-percent-of-gdp-by-country/

4 Source: Bureau of Economic Analysis (2009)

5 Source: Bureau of Economic Analysis (2010)

6 Source: United Nations Statistics Division (2009)

7 Of those exports, 43 percent were capital goods while the remaining 14 percent were consumer goods. Advanced Technology Products (ATP), such as aerospace equipment ($31 billion), semiconductors ($51 billion) and scientific instruments ($21 billion) accounted for 23 percent of the total goods exported. [The Manufacturing Institute, "The Facts About Modern Manufacturing," 8th Edition 2009, 15.]

8 *Ibid.*, 10.

in its output induces more production, both directly and indirectly, from other sectors of the economy. Manufacturing is central to a larger economic ecosystem, its production increases demand for raw materials, energy, construction and services from a wide array of supplying industries in the economy. For every one dollar the manufacturing sector generates, an additional $1.40 is generated for other sectors of the economy.[9] By far the largest backward linkage or 'multiplier' of all sectors with only information, agriculture, forestry, fishing and hunting and construction coming close. The wholesale and retail trade sectors have the lowest multiplier as they generate only 55 cents and 58 cents, respectively, in other additional inputs for every dollar they generate for themselves.[10] Despite the popular belief that domestic manufacturing is "vanishing," the facts show that it remains a vital component to the US economy as a whole (*Figure 1.1*).

While manufacturing employment has been in steady decline since 1987, it has experienced a drastic increase in both production and output. In the same timeframe that employment has dropped 33 percent, output has increased 46 percent and productivity 115 percent.[11] Suggesting that slumping employment numbers may be just as much the result of new technologies—such as robotic

9 *Ibid.*

10 *Ibid.*

11 James Sherk, "Technology Explains Drop in Manufacturing Jobs," Backgrounder, No.2476 (Oct. 12, 2010), Published by the Heritage Foundation, 5.

Figure 1.1 Pie-chart depicting the division of the US Manufacturing Economy based on total economic output. (source: U.S. Bureau of Economic Analysis)

automation and CNC machines—as a decrease in domestic activity itself.[12] Regardless, as a whole, manufacturing industries still employ over 12.2 million Americans—roughly 7 percent of the country's total workforce.[13] Additionally, about one in six private sector jobs are directly dependent upon the US manufacturing base. An additional 6.8 million jobs—in sectors such as accounting, legal, consulting, wholesaling, transportation, agriculture, finance, insurance and real estate—are dependent on the manufacturing sector.[14] Making the manufacturing economy, both directly and indirectly, responsible for roughly 11 percent of the country's total workforce.[15] Despite increasing global competition and an empirical decline, the typical narrative that "industry is dead" is simply not true. The numbers show that the manufacturing economy is still very important on a national level—in terms of economic output—as well as on an individual level—in the number of individuals employed by manufacturing sectors.

In order to adjust to the mobility mandated by the current regime of Flexible Accumulation, small firms make up an

12 A Computer Numerical Control (CNC) router is a computer controlled machine for composites, aluminum, steel, plastics, wood and foams, which has deferred much of the by-hand artisan crafting of these materials to computerized processes.
13 Source: Bureau of Labor Statistics and United States Census (2010)
14 The Manufacturing Institute, 9.
15 This number is derived from the 12.2 million Americans directly employed by the manufacturing sector combined with the 6.8 million jobs indirectly tied to manufacturing, divided by the number of total employed Americans (roughly 173.8 million).

overwhelming share of manufacturing firms. Of the roughly 290 thousand total domestic manufacturing firms operating in 2008, roughly 115 thousand of them (40 percent) were composed of no more than four employees. Firms of 20 to 99 employees were the second most common with 58 thousand businesses (20 percent); between 5 and 8 employees were third with 55 thousand (19 percent); then 10 to 19 with 42 thousand (14 percent); 100 to 499 with 15 thousand (5 percent); and finally the largest, 500 plus employees, with only 5 thousand firms (2 percent).[16] The proliferation of smaller companies has allowed the manufacturing economy as a whole to be more flexible. Allowing it to operate in various geographies throughout the country and engage in a multiplicity of product sectors. This fracturing and dispersal of smaller manufacturing firms across the country has helped to make the landscapes as a whole less visible.

The manufacturing economy is divided into two main categories by the federal government according to the North American Industry Classification System (NAICS), "Durable Goods" and "Nondurable Goods." Durable goods are defined as any good designed to last for three or more years. Nondurable Goods are goods designed to last less than three years. These two main categories are further divided into nineteen different sub-sectors of manufacturing (*Figure 1.2*). As a whole, Durable Goods makeup 54 percent of the total manufacturing output while Nondurable Goods compose the

16 The Manufacturing Institute, 5.

DURABLE GOODS
WOOD PRODUCT MANUFACTURING
NONMETALLIC MINERAL PRODUCT MANUFACTURING
PRIMARY METAL MANUFACTURING
FABRICATED METAL PRODUCT MANUFACTURING
MACHINERY MANUFACTURING
COMPUTER AND ELECTRONIC PRODUCT MANUFACTURING
ELECTRICAL EQUIPMENT, APPLIANCE, AND COMPONENT MANUFACTURING
MOTOR VEHICLE, BODY, TRAILER, AND PARTS MANUFACTURING
OTHER TRANSPORTATION EQUIPMENT MANUFACTURING
FURNITURE AND RELATED PRODUCT MANUFACTURING
MISCELLANEOUS MANUFACTURING
NONDURABLE GOODS
FOOD AND BEVERAGE AND TOBACCO PRODUCT MANUFACTURING
TEXTILE MILLS AND TEXTILE PRODUCT MILLS
APPAREL AND LEATHER AND ALLIED PRODUCT MANUFACTURING
PAPER MANUFACTURING
PRINTING AND RELATED SUPPORT ACTIVITIES
PETROLEUM AND COAL PRODUCTS MANUFACTURING
CHEMICAL MANUFACTURING
PLASTICS AND RUBBER PRODUCTS MANUFACTURING

Source: U.S. Census Bureau using the North American Industry Clasification System (NAICS)

Figure 1.2 The nineteen different sub-sectors of the Manufacturing Economy according to the NAICS standards from the Bureau of Economic Analysis. (source: U.S. Census Bureau)

remaining 46 percent (*Figure 1.3*).[17] Even the smallest sub-sector, in terms of economic production still accounts for billions of dollars in total output for the country.[18] Each of these sub-sectors, at the very least, employs hundreds of thousands of individuals.[19] (For a more in-depth definition of these sub-sectors and the industries they entail, please reference *Appendix A*)

The production of these goods is broadly distributed and plays a significant role in state and local economies across the country. Manufacturing in just five states—California, Texas, Illinois, North Carolina and Ohio—add over half a trillion dollars to the national economy (*Figure 1.4*).[20] Thirteen states rely on manufacturing to generate more than 15 percent of their overall economic activity—Alabama, Indiana, Iowa, Kentucky, Louisiana, Michigan, Mississippi, North Carolina, Ohio, Oregon, South Carolina, Tennessee and Wisconsin (*Figure 1.5*).[21] And fifteen states rely on manufacturing to employ at least 9 percent of their total workforce—Alabama, Arkansas, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Mississippi, New Hampshire, North Carolina, Ohio, South Carolina,

17 Source: Bureau of Economic Analysis (2009)
18 Apparel and Leather and Allied Product Manufacturing has the smallest total output of the nineteen at $12.6 billion. Chemical Manufacturing has the largest total output at $216.5 billion (Source: Bureau of Economic Analysis, 2009)
19 Petroleum and Coal Products Manufacturing employs the fewest of the nineteen, employing 113,800 Americans. Food and Beverage and Tobacco Product Manufacturing employs the most at 1.8 million Americans (Source: Bureau of Economic Analysis, 2010)
20 Source: Bureau of Economic Analysis (2009)
21 Source: Bureau of Economic Analysis (2009)

Tennessee and Wisconsin (*Figure 1.6*).[22] (For a more in-depth look at the importance of manufacturing to individual states please reference *Appendix B*)

Despite its decline, the manufacturing economy is still important to the entire country as both a source of economic production as well as a source of employment. This fact is often amplified when analyzing the role of manufacturing industries at the state and local levels. However you look at it, the overstated opinion that that "domestic manufacturing is dead" is a verbose over exaggeration. In fact, the manufacturing economy is still highly relevant to both state and national economies as well as to the wellbeing of individuals. It is not a deceased sector of the American economy, but rather an integral one that requires greater acknowledgement and a more thorough understanding.

22 Source: Bureau of Economic Analysis (2009)

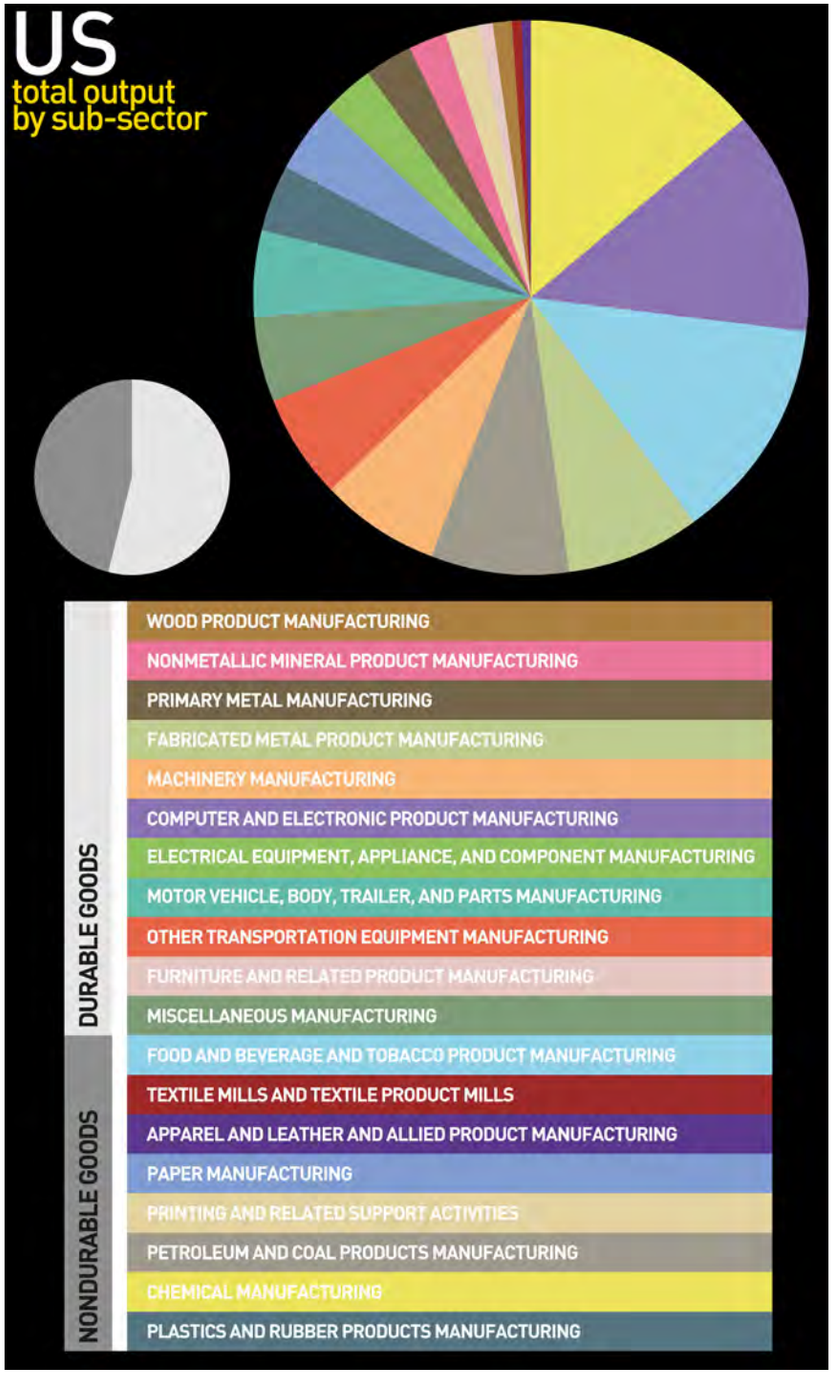

Figure 1.3 The division of the US Manufacturing Economy based on total economic output. (source: U.S. Bureau of Economic Analysis)

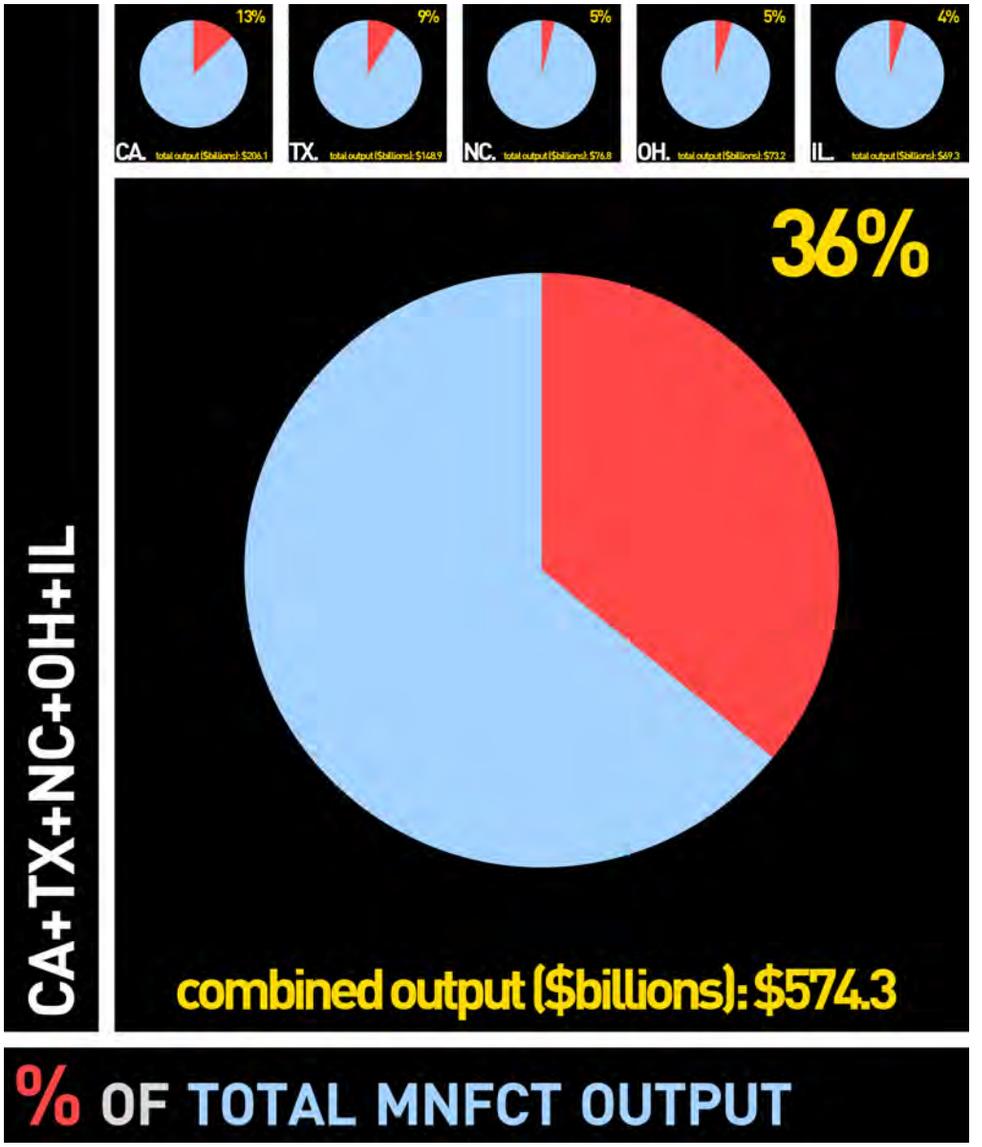

Figure 1.4 Five states (California, Texas, North Carolina, Ohio and Illinois) account for $574.3 billion (36 percent) of country's total manufacturing output. (source: U.S. Bureau of Economic Analysis)

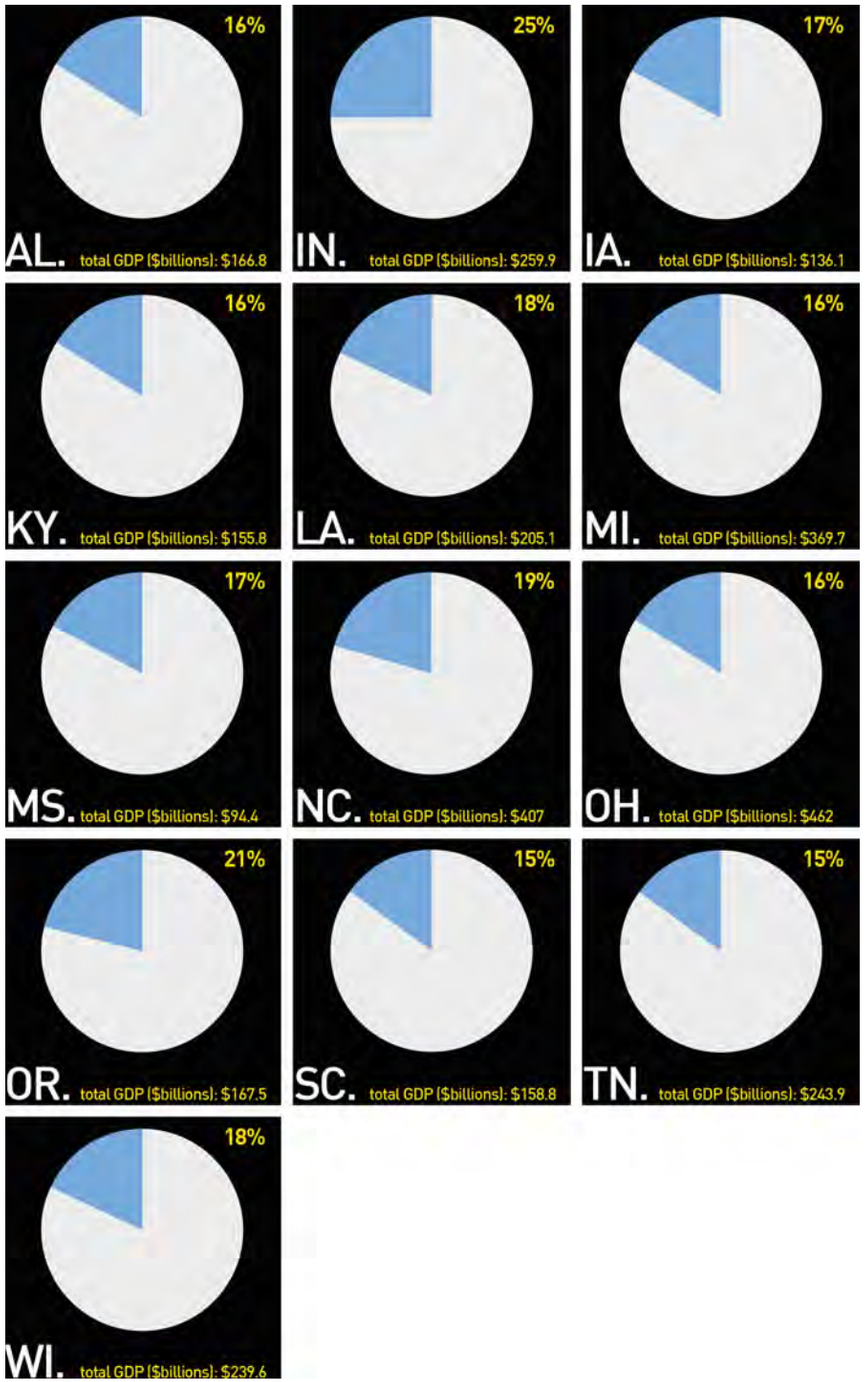

Figure 1.5 The thirteen states whose manufacturing output accounts for at least 15 percent of their total GDP. (source: U.S. Bureau of Economic Analysis)

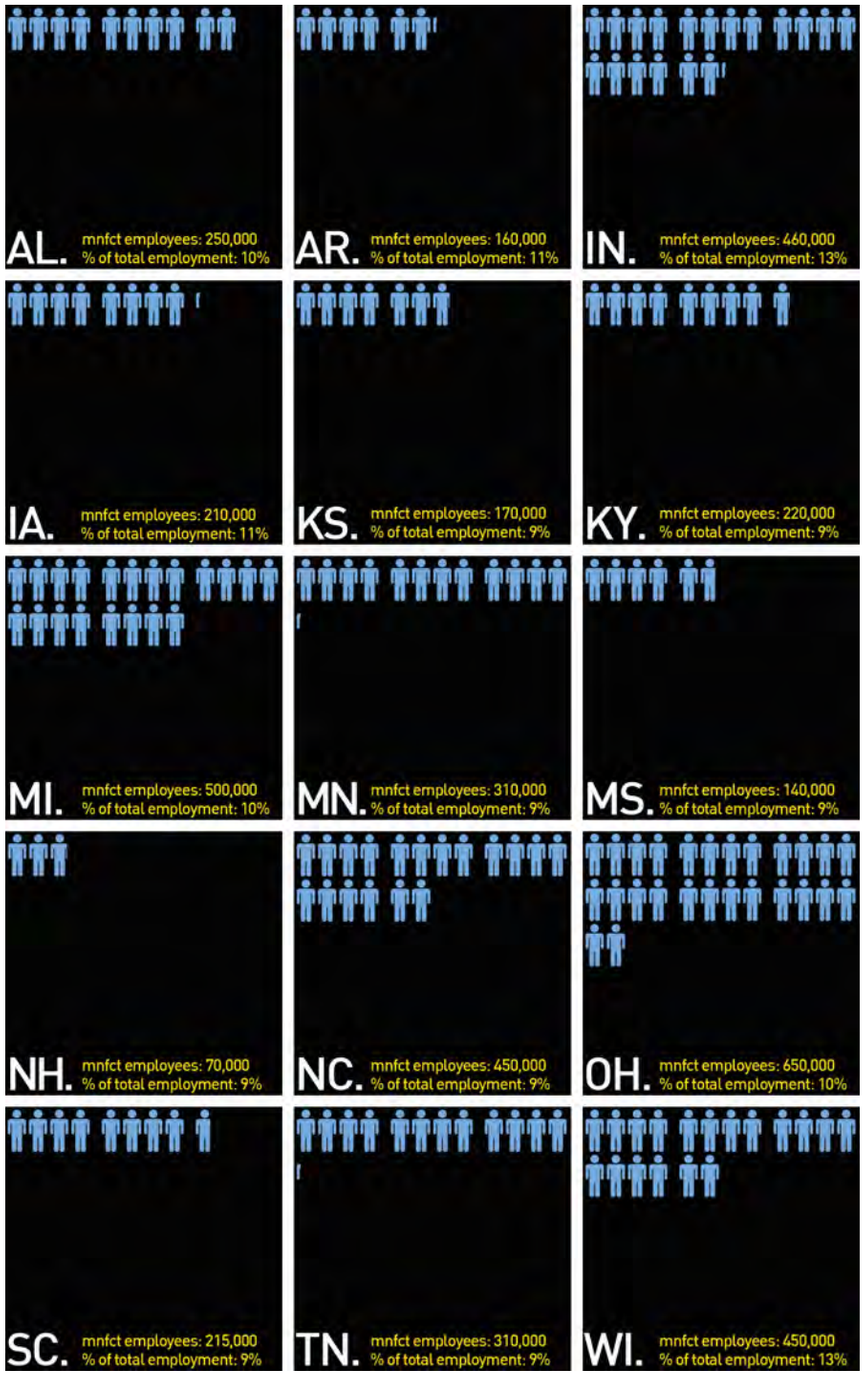

Figure 1.6 The fifteen states whose manufacturing sector accounts for at least 9 percent of their total employment. (source: U.S. Bureau of Economic Analysis)

2:
FROM FORDISM TO FLEXIBLE ACCUMULATION

HOW THE TRANSITION REDUCED PUBLIC INTEREST IN THE PRODUCTIVE FORCES

The current atmosphere of public disinterest in manufacturing is deeply rooted in the history of economic development. More specifically, the shift in the methods of production that occurred in the early 1970s as the world experienced a transition in its regime of capital accumulation from Fordism to Flexible Accumulation.[1] [2] The shift itself not only effected the *productive forces*, but also the *social relations of production*, which resulted in a culture of consumption characterized by difference, ephemerality, spectacle, fashion and the commodification of cultural forms.[3] [4] It is from within this consumer culture that public interest has become wholly focused on consumption with little concern for the means of production—knowing where things come from and how they are made. In order to fully understand the current obsession with consumption it is helpful to first analyze the difference between Fordism and Flexible Accumulation and how the transition necessitated a cultural shift.

As a regime of accumulation, Fordism depended on the complex interplay between the productive forces, political

1 As David Harvey describes in The Condition of Postmodernity (121) a 'regime of accumulation' is the superstructures that stabilize, over a long period, the allocation of the net product between consumption and accumulation.
2 David Harvey, "The political—economic transformation of late twentieth-century capitalism," in The Condition of Postmodernity (Oxford, UK: Basil Blackwell Inc., 1980), 147.
3 Here the terms 'productive force' and 'social relations of production' are used in the Marxian sense as discussed by David Harvey in The Limits to Capital (99-102). The 'productive force' is the power to transform and appropriate nature through human labor. The 'social relations' are the social organizations and the social implications of the what, how and why of production. Together the two abstract concepts makeup the Marxian 'labor process.'
4 Harvey, The Condition of Postmodernity, 156.

regulations, social relations and psychological propensities in order to maintain semblance as a viable schema for capital accumulation.[5] However, for our purposes, Fordism will more broadly be defined as a regime of accumulation primarily characterized by its rigidity, large-scale production methods and its adoption of a modernist aesthetic.

Around the beginning of the twentieth-century, guided by the US economy, Fordism became the dominant regime of accumulation throughout the developed world. Named after Henry Ford for the new production scheme he adopted to mass-produce his Model-T in the early 1900s, Fordism arose out of the desire to maximize profits by simplifying the production process, cutting costs and manufacturing goods in massive quantities. Prior to Fordist production methods, automobiles could only be manufactured by a select group of highly specialized craftsmen. The labor required a specific skill set, was time consuming and could only produce in small quantities—usually on an individual need basis. With the advent of Fordism, that would all change. Appropriating Taylorist principles of scientific management, Henry Ford was able to drastically modernize the production process.

Possibly the most influential element of the Fordist production model was Ford's implementation of large-scale assembly lines.[6] In

5 Harvey, "The political—economic transformation of late twentieth-century capitalism," in The Condition of Postmodernity
6 Harry Braverman, "Machinery," in Labor and Monopoly Capital (New York: Monthly Review Press, 1974), 184-235.

order to increase efficiency and output Ford sought to re-organize the labor process by establishing a hierarchy of authority and information flow.[7] The assembly line became the means through which this was achieved. Previously relying on the skilled laborer as both technician and manager, Fordism aspired toward complete vertical integration, which would establish a schism between manual-labor and scientific management. A laborer in an assembly line did not need to know how to construct a car from the ground up, or even how the mechanisms of the car worked, they simply needed to know one menial task and have the ability to do it over and over and over again. What once required months, a lot of overhead and a specialized group of craftsmen, could be accomplished by a relatively 'skill-less' labor force in a fifth of the time, for a tenth of the cost.

With the deskilling of the labor force, the primary capital investment was transferred from the laborer to the manager.[8] The success of a business was anchored, not in labor itself, but in the ability of a manager to extract the most from that labor force through the application of scientific management. That is, a style of management that was highly rationalized. Every aspect of the production method was seen as quantifiable, output was broken down into statistics and scientific solutions were applied in order to maximize both individual and total output. The laborer lost his

7 Harvey, The Condition of Postmodernity, 128.
8 Braverman, "The Division of Labor," in Labor and Monopoly Capital, 70-84.

agency and was reduced to the bottom rung of a vertically integrated corporate superstructure. The once 'skilled-artisan' was subjected to labor that was monotonous, insultingly over-simplified and utterly alienating.[9] The skilled craftsmen who once handcrafted the beautiful metal chassis of automobiles of old, were reduced to a small cog in a much larger industrial machine. A small piece of a massive assembly line, the Fordist laborer was forced to stand still along an endless conveyor belt tightening bolt after bolt with little time in-between to have as much as a thought.

As an individual laborer, the adoption of the Fordist assembly line was degrading and had completely deskilled the labor force. Handcrafted products were rendered as little more than kitsch. However, it also brought a sense of modernist amazement to the production process. For the first time, the majority of the public had access to products that were previously unobtainable. The Fordist production method allowed for tangible goods to be mass-produced and shipped to markets across the country. It must have been a moment of true modernist futurism to behold, to instantly have access to an entire line of goods, made on the other side of the country, which was previously only accessible to either local markets or the extremely wealthy.

However, the expansion of consumer markets did not come without a price. The newly popularized assembly line brought into

9 Harry Braverman, Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century (New York: Monthly Review Press, 1974), 4.

question the issue of proper worker compensation. Whereas prior to Fordism the skilled-laborer's pay was directly correlated to the amount of work-time he would need to put in before the employer could extract a given profit from the work; operating as a small cog in a larger assembly line, the deskilled laborer's menial task was only a small fraction of the amount of work-time that was needed in order to profit. Under Fordism, work-time and profit were no longer directly correlated, bringing into question how fair wages would be determined. Ford himself addressed this issue by believing that his employees should be able to afford the product they were manufacturing. An ideal solution if he could ensure his employees would 're-invest' their wages by purchasing the goods they had just helped to produce; but as a regime of accumulation, could all employers be expected to be as benevolent and could all employees be expected to simply 're-invest' their wages? Furthermore, the lack of skill involved meant that the labor force was increasingly disposable. There was no inherent expertise required to work in an assembly line, simply minimal training and an able body.

Bizarrely, the concern with regards to fair wages and a disposable workforce had a positive effect on the labor force, as a whole. These concerns elicited a social response that revolutionized the labor process: the creation of labor unions. Fearing the ability of laissez-fare capitalism to secure the rights of the Fordist worker, social relations were restructured in order to ensure the collective

bargaining rights of the worker.[10] Union representation helped to assure the worker that he was not being taken advantage of. He would be subjected to monotonous and mindless labor on the condition that he could negotiate his wages, hours, benefits and job security. Whether business owners liked it or not, the Fordist means of production came to rely upon a stable core of unionized labor. Coupled with the pure massive-scale of production required for the long assembly lines, Fordism was a heavily centralized and rigid regime of accumulation; Fordist factories were geographically anchored by a core of unionized laborers and the large swathes of land required for mass-production.

Thus Fordism operated in conjunction with the modern aesthetic that was emblematic of the early twentieth-century. It was centrally organized and over-rationalized to the point of rigidity. That is, it operated on the assumption that an ideal 'optimum efficiency' could be achieved through an apt application of scientific management.[11] As a result, Fordist industries were not constantly trying to relocate production, but rather obtain maximum profitability by continually operating at peak-efficiency at a geographically anchored facility. As a regime of accumulation, Fordism wholly embodied the spirit of high modernism. It was rigid, centralized and hierarchically organized. As a whole, this allowed Fordism to

10 Harvey, The Condition of Postmodernity, 132-33.
11 Braverman, "Scientific Management," in Labor and Monopoly Capital, 85-123.

maintain legibility as a schema of reproduction.[12] When purchasing a Model-T in New York, the consumer understood that the car had been constructed in an enormous assembly line in Ford's Highland Park facility (Michigan). The technical intricacies of production may have been foreign to the average consumer, but the concept of the larger schema was clearly defined. Under the regime of Flexible Accumulation, any semblance of transparency and clarity that was previously upheld by Fordism would become completely muddled.

Fordism experienced its 'boom' in the years following the Second World War as America experienced an unprecedented period of economic, social and political influence. Yet, despite its success for the first three-quarters of the twentieth-century, the Fordist experiment showed signs of collapse as early as the 1960s before it came crashing down with the recession of 1973.[13] The combination of the devaluation of the dollar and the reinvigoration of foreign markets—especially in Western Europe and Japan—laid the foundations for a necessary shift away from Fordism. In order to account for increased international competition, American businesses had to restructure in order to compete in a newly globalized economy. Multinationals began to pursue offshore manufacturing, bringing Fordist industrialization to entirely new geographies.[14] Whereas Fordism helped to make manufactured

12 Harvey, The Conditions of Postmodernity, 122.
13 *Ibid.*, 142-6.
14 *Ibid.*, 141.

goods accessible domestically, the process of globalization emphasized a new universality of production. A pair of shoes made in Portland Oregon could suddenly be shipped and sold in store in Tokyo Japan.

Initially, this process clearly had its benefits from a management point of view: there were a seemingly infinite number of new markets in which a product could be sold. However, as Western Europe and Japan (joined by a host of newly industrializing countries) mastered Fordist industrialization, international competition intensified to the point that Fordism itself began to crack. The increase in international productivity soon flooded the global market with an overabundance of goods. As supply greatly outweighed demand, corporations soon found themselves with a lot of unusable excess capacity (chiefly idle facilities and equipment).[15] The massive scale of production that was a staple of Fordism was no longer viable in the globalized market place. Simply reducing output would only curtail profits, corporations had to find a way to restructure themselves in such a manner as to maintain the profit levels that they had become accustomed to under Fordism. This period of restructuring drew into question the essential organizing principle of Fordism: rigidity. Corporations could no longer afford to remain rigid and sedentary, they had to be able to instantly adapt to constantly shifting global economy. Production had to suddenly

15 *Ibid.*, 145.

become completely mobile. Various functions and decisions would need to occur simultaneously over varying spatial geographies. The centralized vertical integration structures of Fordism were dissolved and replaced by a system of horizontal integration that was inherently more flexible and mobile. Striving for capital viability, experimentation with these new strategies slowly undermined Fordism as an entirely new regime of accumulation began to take shape: *Flexible Accumulation*.

As our current regime of accumulation, 'Flexible Accumulation' is marked by a direct confrontation with the rigid centralization of Fordism. It rests, above all else, on flexibility with respect to labor processes, labor markets, products, and patterns of consumption.[16] It is primarily characterized by the emergence of entirely new sectors of production, a vast surge in 'service sector' employment, new markets, and above all, greatly intensified rates of commercial, technological, and organizational innovation.[17]

Initially, this shift signified an industrial crisis in major cities across the United States. Suddenly the rigidity of American corporations—an advantage as they perfected mass production during Fordism—became a huge liability. Relocation, responsiveness to customers and improvements in production required flexibility. A new economic environment, which American companies like

16 *Ibid.*, 146-8.
17 *Ibid.*

General Motors and Ford simply weren't built to succeed in. In order to survive, these large rigid corporations were forced to reorganize and relocate. In the United States, this largely meant the deindustrialization of urban centers as larger corporations were fractured and relocated either overseas or to secondary geographies. Once a dominant psychological and visible presence in American cities, the shift to Flexible Accumulation meant that industrial production would become less visible to an increasing number of people.

Flexible Accumulation has since represented a concerted effort to bypass the rigid hierarchies (especially that of unionized labor) that were particularly representative of Fordism. With access to previously untapped labor markets in regions lacking industrial histories, domestic unionized labor has since been replaced by cheap sub-contracted labor procured overseas. Today, corporations aim to reduce the number of 'core' workers and rely increasingly upon a workforce that can be quickly taken on and just as quickly be disposed of at little or no cost. 'American' corporations prefer to relocate or to outsource production to hubs of cheap labor such as China and Southeast Asia at the expense of their domestic facilities. Utilization of cheap labor in conjunction with the use of new technologies and automation has made production costs cheaper than ever before, rendering the means of production as more mobile then ever.

This drastic reduction in overhead has been made profitable,

as the production process has been restructured in order to compensate for the increasingly flexible marketplace. Under Fordism production always occurred en masse. The more you produced, the more you could sell and the more you sold the more money you made. However, in the immediate post-Fordist landscape the globalization of production meant that there were too many suppliers to accrue profit strictly from supply and demand. There were simply too many suppliers and not enough demand for a relatively select number of marketable goods. In order to maintain (or bypass) Fordist levels of profitability, the contemporary production process has been fractured. The search for new product lines and market niches along with an acceleration of turnover time have surged to the fore of corporate strategies for survival.[18] A core element of production under Flexible Accumulation is innovation and the ability to identify—or invent through marketing—market niches that will subsequently need to be filled. Under Fordism, corporations were concerned with clearly defined markets, with high demand, that required the production of goods on a massive scale. Fordist markets were often singular and stable. In contrasts, the markets of Flexible Accumulation are variable and unsteady, constantly in flux. Today a corporation no longer produces a singular product in massive quantities, but rather tries to define numerous markets that

18 *Ibid.*, 145.

require small-batch production.[19] Corporations have come to rely on the instability of the market to regularly identify new consumer niches in order to cope with the diminution of the scale of production.

These flexible production systems have permitted, and to some degree depended upon, an acceleration in the pace of product innovation together with the exploration of highly specialized and small-scale market niches.[20] Corporations have since shifted from mass-producing a singular recognizable product, to constantly searching for newer, small-market goods to produce. The factory that once produced entire Model-Ts under Fordism now might only produce the window mechanism for the new Ford Focus in small-batches, and are constantly trying to identify new uses for their mechanism. Therefore an essential element of Flexible Accumulation is neither the forces of production nor the labor forces themselves, but rather the ability of the recently popularized 'service sector'—designers, inventors, corporate consultants, financiers, marketing firms, etc.—to carve out new niches in the market. The business that manufactures the window mechanism for the new Ford Focus, will hire a private consultant who advises the business owner that the hydraulic system in their mechanism can easily be adapted to fill a void in the 'garage door opener market.' The company immediately hires an outside industrial designer/inventor to retrofit

19 *Ibid.*, 155-6.
20 *Ibid.*

their hydraulic window mechanism as a garage door opener. A marketing firm is brought on board to tell the world how the new garage door opener fills a specific market need and quickly—due to the low costs of production under Flexible Accumulation—the company has expanded its same base product into a new market.

In order to keep pace with the acceleration in innovative forces and specialized markets, corporations have had to drastically reduce their turnover time—the time it takes to convert raw material to marketable good. This has been achieved primarily through the use of new technologies (such as robotic automation) and application of 'just-in-time' production methods. New automation technologies have deferred much of the manual labor required by Fordist assembly lines to infinitely more efficient machines. While 'just-in-time' production methods have dealt with the increased compartmentalization of products by ensuring that the various components are produced in the proper quantities and shipped 'just-in-time' to be assembled into a marketable good.[21] But accelerating turnover time in production would be useless without a similar reduction in the turnover time of consumption—the amount of time a product is useful or 'in fashion.' As a result, the half-life of products has been continually reduced since the onset of Flexible

21 'Just-in-time' production is an inventory delivery flow system that ensures that goods are only produced as needed in the proper quantities. A car is no longer centrally manufactured, but rather relies on market signals that are sent out signaling various producers to manufacture their given pieces of the car in order to be shipped 'just-in-time' to a central facility where the pieces will be assembled and shipped to market.

Accumulation. A typical Fordist product, for example, may have had a half-life of five to seven years, but under Flexible Accumulation a similar product will only last for a year or two and in certain sectors—such as the software industry—that half-life has been reduced to a matter of months.[22] Flexible Accumulation has been accompanied on the consumption side, therefore, by a much greater attention to quick-changing fashions and the "mobilization of all the artifices of need inducement and cultural transformation that this implies."[23]

The relatively rigid and stable aesthetic of Fordist modernism has given way to the ferment, instability, and fleeting qualities of a postmodern aesthetic boasted by Flexible Accumulation that celebrates difference, ephemerality, spectacle, fashion and the commodification of cultural forms.[24] Under this postmodernist regime of accumulation the emphasis shifts from rationalization and legibility to illegibility and dialectical convolution. The goal of production is no longer the semblance, coherency or constructivism of Fordism, but rather on the confusion and destructive nature of Flexible Accumulation. Under such a regime of accumulation the nature of capital is not to build upon a coherent foundation, but rather to exist in a constant state of flux; to create new landscapes in its own image while simultaneously rendering its previous landscapes

22 Harvey, The Condition of Postmodernity, 155-6.
23 *Ibid.*
24 *Ibid.*.

obsolete.[25]

To the consumer, the system becomes almost impossible to comprehend. Markets have are so specialized and multifarious that it has become too complicated to understand where and how goods are physically produced. My car is no longer constructed in a large assembly line in Highland Park, Michigan, but rather the glass comes from China, the window mechanism from Ohio, the chassis from Mexico, the wheels from Taiwan, the paint from California, the shocks from Canada, the engine from Germany...The list goes on and on. The pieces themselves may come together 'just-in-time' to be assembled in a plant in Detroit, but the car itself is constructed in a seemingly infinite number of varying geographic locations. (*Figure 2.1)*

As a consumer, it becomes overwhelming to the point where the very idea of semblance becomes a foreign concept. However, the lack of coherency is no excuse to dismiss the entirety of the productive forces. We do exist in the seemingly indecipherable post-Fordist regime of Flexible Accumulation; characterized by decentralization, increasingly disposable products, destructive capital and unprecedented spatial and temporal flexibility. However, in sacrificing scale and homogeneity we have gained scope and diversity. It is true we may never regain the clarity of Fordist production, but with Flexible Accumulation we now have an

25 Harvey, "Money, Time, Space, and the City": 182.

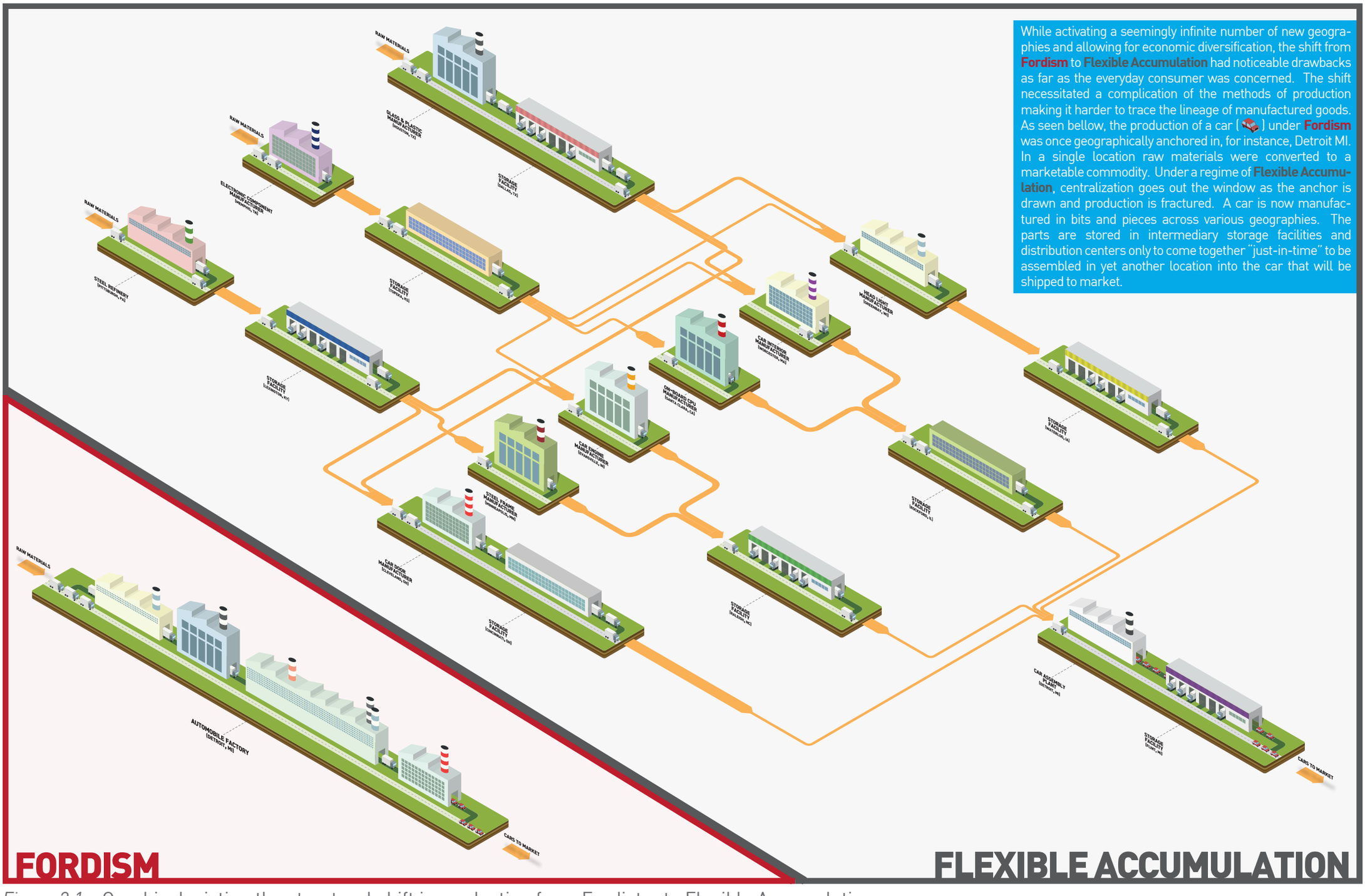

Figure 2.1 Graphic depicting the structural shift in production from Fordistm to Flexible Accumulation.

unparalleled number of products being manufactured in a plethora of diverse geographies. We need to embrace the paradigm shift inherent in postmodernism and abandon our modernist desire to understand the totality of our goods in favor of an appreciation for the individual components.

The shift toward Flexible Accumulation should not be viewed as a loss of clarity, but rather a diversification of production. This new regime of accumulation has brought with it the activation of previously unindustrialized geographies. The reduction in communication, transportation and administrative costs has allowed manufacturing to spread to new environments in order to cope with the increased flexibility of the new regime; more things are being produced in more place than ever before. However, in this post-Fordist landscape we have been conditioned, not to focus on understanding production, but rather to completely submerge ourselves in the consumption of increasingly disposable products. This obsession with consumption of rapidly changing fashions has allowed for the geographies of production to fade into the background. Even when located in close proximity to urban centers, these industrial typologies remain unnoticed in plain sight, as attention has shifted to the spectacles of consumption. But if the capitalist mode of production is to be understood as an invariant shaping force of history itself—at the very least an invariant shaping force of consumption patterns—then it is essential that we explore and come to understand the landscapes of

production.[26]

The fact that these geographies are mobile and destructive by nature should not defer from the fact that they are pivotal in the reproduction, not only of consumable goods, but of culture and society. Their fleeting nature is not an excuse to ignore them. By treating them as if they were already gone we have given them no reason to stay. What is needed is to treat these industrial geographies, not as if they were a world apart, but rather as the spatial proximate landscapes that they are. Socially, politically, culturally, historically and economically relevant these landscapes deserve to be explored and better understood.

26 Harvey, The Condition of Postmodernity, 121.

3:
LANDSCAPES OF INDUSTRIAL PRODUCTION

3.1:
TRYING TO VIEW THE MACHINE

I am not quite sure if it was the pure fantastical nature of the giant cranes in the distance, the fact that it was all completely foreign to me—a new built typology—or maybe just that it was a beautiful eighty-two degree day in the middle of January, but so far, nothing can even compare to the view of the Los Angeles/Long Beach Port as I approached it at seventy-five miles an hour heading south on the 710-freeway. The towering cranes asserted their dominance on the horizon. Already monstrous machines set against the Pacific Ocean from twenty miles out, they only got bigger as I continued my approach. When I finally managed to get as close as I could, they became nearly unreadable, existing somewhere in-between a modern interpretation of a Brachiosaurus and a large pile of scrap metal. I knew their function, but up close their form was completely foreign.

Only once I managed to take my eyes off, in what any other context would just be a simple crane, did I realize what a different world I was in. It was a world of a completely different scale. The roads were wider to better accommodate the large eighteen-wheelers that seemed to be the main living inhabitants of the port. The boats were gigantic so that they could carry more of the giant boxes that were unloaded by the aforementioned massive cranes and organized

into neat rows as far as the eye could see. The massive fetes of human engineering were made infinitely larger by their existence as isolated objects amongst their surroundings. The cranes were grouped in isolated packs of five or six, but otherwise nothing around them came close in size until my eye caught the next pack of cranes standing in the distance. The boats floated isolated on the Pacific as scaleless objects before docking and being absorbed into the port typology. The giant boxes, the shipping crates, were already big enough on their own, but were continuously stacked, one on top of the other, in order to create increasingly larger geometries that completely trumped me even as I straightened by back to its utmost.

It certainly wasn't a place that was designed for me, a 6-foot-2-inch human male and yet, that seemed to make it even more exciting. Both aesthetically and functionally, nothing had been designed to accommodate me. I was not meant to interact with the port typology—with the landscapes of industrial production. As I walked large expanses of what seemed to be redundant sidewalks, I could not help but feel as if I were walking on the surface of some alien planet. My only assurance of human life was knowing that the massive machines were operated by human beings nestled in some cramped cockpit towering above the port. For them, it was entirely familiar, they weren't exploring the surface of a new planet, it was just another day at the 'office;' they saw these machines everyday. In that sense, I was the only explorer there that Tuesday

afternoon. Despite the awe inspiring nature of the alien landscape, no other 'tourists' were strolling the massive streets in order to get photographs of the mechanical monsters that lived at the port.

I did not jump on a tour bus to get to the port nor did I have brochure to tell me of the port's attractions. Despite its mysticism—as both a built environ and a site of logistical miracles—it was not a tourist attraction. Frankly, a port is probably the last thing that jumps to mind when thinking of urban attractions. Considering the manufactured goods crammed into the surrouding shipping crates probably wouldn't be considered 'commodities' until they were distributed and placed on store shelves, the port could be considered a 'landscape of production'—if we think of the production process as not being complete until raw material becomes a consumable good. As a landscape of production, the port had inhereted the stigma attached to these geographies, nothing more than industrialized cesspools. That stigma, set against the dominant consumer culture, has overrun any desire to explore these landscapes. As a result, the landscapes of production have dissolved into a state of spatial purgatory; they are there, but we refuse to acknowledge their spatial formations as anything more than an undesired intermediary between us and our commodities. They are a blemish on the otherwise idealized urban landscape of consumer spectacle.[1]

However, the landscapes themselves also play a role in

1 David Harvey, "Flexible Accumulation through Urbanization Reflections on 'Post Modernism' in the American City," Perspecta Vol. 26 (1990), 251-272.

removing themselves from the public purview. As far as the Los Angeles/Long Beach Port was concerned, it was not a landscape that I was meant to see and subsequently, it was not the most welcoming. It was hard enough just to find a place to park in the massive forty-three square mile complex let alone gain any substantial access. While I may (or may not have, for legal reasons) wandered around aimlessly taking pictures of the port, I later found out from the security officer at the port's (very hard to find) clerical office, that any form of photography was illegal without a city permit. In fact, photographs of the Port were considered to be a "national security threat." Knowing that any formal photography was out of the question, I tried to find somone of authority who could educate me on the port activities. I managed to get the attention of the "Terminal Services Manager" as he entered the office, but he only had enough time to hand me his business card as he looked past me at a wealthy Japanese investor with whom he was about to meet.

Despite the awe inspiring nature of the port, it was an environ that was not meant to be publicly catalogued and unless you are a wealthy investor, it is incredibly difficult to get any information on the actual daily operations of the port. It was a landscape that was more than pleased to hide behind its negative public reputation. Regardless of both its spatial and economic significance, it wanted to remain invisible.

These sentiments were confirmed as I decided to stop at a

BP Oil Refinery located in Carson, California on my way home. I had always seen the massive American flag draped over the vents of the refinery just off the 405-freeway as I commuted between Los Angeles and Orange County as a child, but had never had the time to pay it a visit. As I stood in the parking lot of a small diner to take a few quick pictures of the incredible mechanic structures of the refinery across the street, I was interrupted by a BP security officer who informed me, just like the port, taking pictures of the refinery was strictly prohibited. A bit ironic considering the mural painted on the company's silo just a block away that lauded the refinery's relationship to its surrounding community as it read, "Doing the right thing for our environment and the community." Regardless, I managed to covertly snap a few pictures from my car before relocating to a the gas station even further down the road where I took a few more before heading home. Even though I managed to sneak a few pictures, it was clear to me that these were places that *did not* want to be remembered.

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DAYS WORKED WITHOUT
LOST TIME INJURY
60
"SAFETY FIRST"

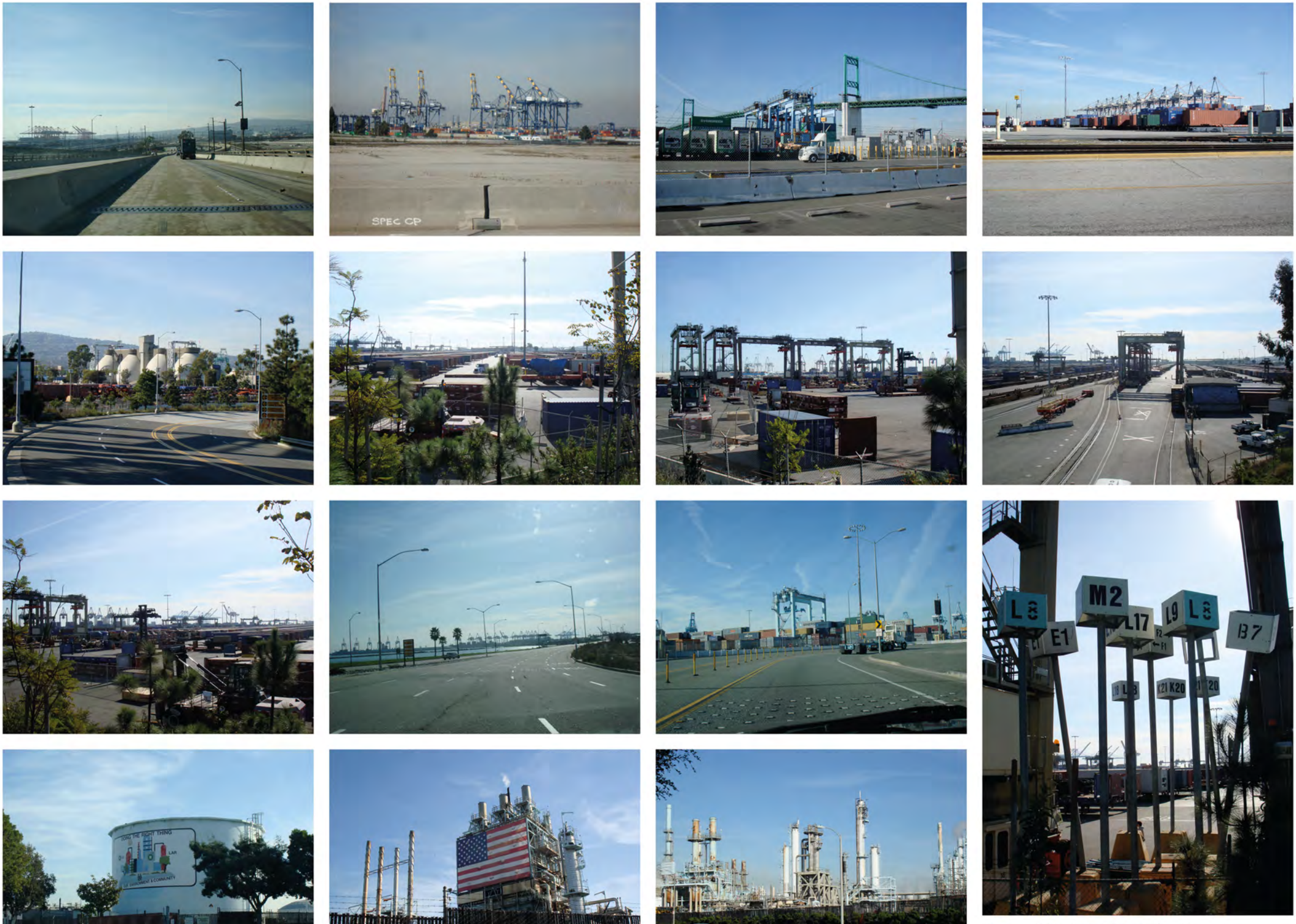


Image 3.5 My trip to the Los Angeles/Long Beach Port and BP Oil Refinery in Carson, CA.

3.2:
THE LANDSCAPES OF INDUSTRIAL PRODUCTION

My experience at the Los Angeles/Long Beach Port and the BP Oil Refinery is indicative of the landscapes of industrial production as a whole. Even in the 'age of the internet,' many industrial sites remain shrouded in mystery. Hard enough to locate let alone to truly understand. Businesses are infinitely more concerned with letting us know where to buy their products than they are with telling us where and how they are made. The roughly $1.6 trillion in total output and 12 million manufacturing employees are evidence that goods are indeed being produced in our country. We know the landscapes of production exist, but we don't quite know what they look like or how they operate. Luckily, after arduous research I managed to locate sixty or so factories across the country that produce a plethora of goods; from pet food, to automobiles, to ceramic logs.[1] After sifting through the numerous, sites I have mapped both those that appear typical of the industrial landscape as well as those that seem abnormal. Together, these mapped landscapes lay the foundation for developing archetypes and better defining the *industrial typology*. (All of the mapped locations are available in *Appendix C*)

The landscapes themselves come in all different shapes

1 Respectively, these are catalogued via the Friskies Pet Food Factory (Crete, NE), General Motors Assembly Plant (Fort Wayne, IN) and Hargrove Manufacturing (Sand Springs, OK). (For maps of these locations see *Appendix C*)

and sizes.[2] Some are nicely plugged into the city grid, while others are squeezed onto irregular plots crammed between rail lines and highways.[3] Some relax in the country amongst acres of open land, while others nestle cozily up against large waterways.[4] Yet despite their differences, each is representative of a unique form of architecture that remains underappreciated in contemporary society.

As part of the industrial landscape, these architectural artifacts exist both as planned and un-planned, massive and piecemeal. The structures themselves are built from the inside out so that the formal elements of the exterior directly reflect the needs of the interior. For the most part, industrial interiors are the realm of the machine. It is in the interiors that the manufacturing process occurs, transforming raw goods and components into marketable goods. Assembly lines span the interior space; a domain dominated by conveyor belts, automated tools and stationary employees who—"from nine to five"—more closely mimic machines than their social counterparts. On the inside, these buildings are complex, bustling, technocratic landscapes.

2 Of those that I have mapped, the smallest is Metomic Industries (Chicago, IL) and the largest is the Boeing Plant (Everett, WA). (For maps of these locations see *Appendix C*)

3 An example of a gridded facility is Steinway Piano Factory (Queens, NY), while an irregularly plotted industrial site can be seen in Wrought Washer Manufacturing (Milwaukee, WI).

4 Places such as the General Motors Stamping Plant reside in the sparsely populated Marion, Indiana while steel plants such as US Steel's Irvin and Edgar Thomson Plants are firmly pressed against the Allegheny River—taking advantage of the added infrastructural support—in Pittsburgh, Pennsylvania.

However, the exciting events of the interior are not accurately projected onto the exterior. The exteriors are utilitarian shells whose primary concern is to protect the fragile metal machines that rest within. As architecture, the exteriors serve little function beyond their ability to shield their precious interiors. Often mimicking "big box stores" and desolate urban architecture, it is unsurprising that industrial buildings are often typified as 'banal structures.' Programmatically, the exterior forms reveal very little about their bustling interiors. Thus creating a programmatic schism between exterior and interior. However, the two are formally reflective as the exterior encapsulates the arrangement of its interior counterpart and is similarly constructed of utilitarian materials.[5]

Exteriorly, the structures slowly begin to reflect the economic output of their interiors, establishing a direct correlation between structural form and flows of capital. As a result, these buildings aren't stagnant—despite their comparatively unremarkable exteriors—they are constantly shifting and adapting to best house abstract economic flows of capital output. Over time the buildings expand and contract with the success of their corporate proprietors. Like the regime of capital they operate under (Flexible Accumulation) the buildings themselves have to maintain structural flexibility—able to instantly adjust to economic shifts.

5 Here the term "schism" refers to the theory of an inherent rift between exterior and interior as developed by Rem Koolhaas in his book Delirious New York in the chapter "The Double Life of Utopia: The Skyscraper" on pages 105-106.

The primary way in which flexibility is maintained is through the use of a form of modular architecture, in which the individualized structural building blocks are the direct result of the needs of the fragile interiors; a modular 'shelling.' This unique type of modular architecture is best described as *utilitarian modularism*. Exterior structure is adjusted and refined solely to meet the needs of the encased mechanical interiors. As demand increases and more production is necessary, new built forms are constructed, twisted and turned until they can be appropriately attached to the pre-existing structure. Together, the smaller structural building blocks create the perception of a massive unified architecture, while in reality the industrial forms are completely pixelated.

This pixelized disposition allows the industrial landscape formal freedom that is rarely seen in urban and suburban architecture. Often programmed purely for the purpose of production, the buildings are free to take whatever form they need, plugging in new modules and removing old ones at will. Consequently, the industrial landscape is diversely represented by a seemingly infinite number of artificial formations. Some grow into massive enclosed singularities, some into shapeless blobs of smaller modules and others into elongated snaking bodies of matter; every building has its own unique story of capital to tell.

The nature of utilitarian modularism serves as both the means through which the buildings maintain unique configurations

as well as the canvas for a plethora of materials and textures (*Figure 3.2.1)*. Each module stands as its own individual cask, predictably constructed out of cheap and easily accessible materials to ensure its immediate readiness. Individually, each structural unit may be rather banal—a plain architectural building block—but as a whole the buildings come together as a material, textural and temporal pastiche. Each industrial complex recants an architectural narrative with each module serving as the prose. Unlike common urban and suburban architecture, which regularly tries to guise or exaggerate monetary value, industrial architecture is (almost always) representative of cost cutting construction techniques; constructed out of the cheapest materials utilizing the most economical construction methods. Visually, the varying architectural fabrics come together to create a three-dimensional quilt of diversified textures. Together, these varying building blocks converge to tell an economic and cultural history of budgetary architecture and the capital flows that produced them.

Despite their intricacies and the illuminating stories they have to tell, these industrial forms remain largely unexplored; and that is certainly not by accident. As a whole, the landscapes of industrial production do their part to remain removed from public purview. Conveyors of capital production, they are not intended as public architecture. Regardless of the informative tales industrial architecture has to tell, initial impressions of the forms

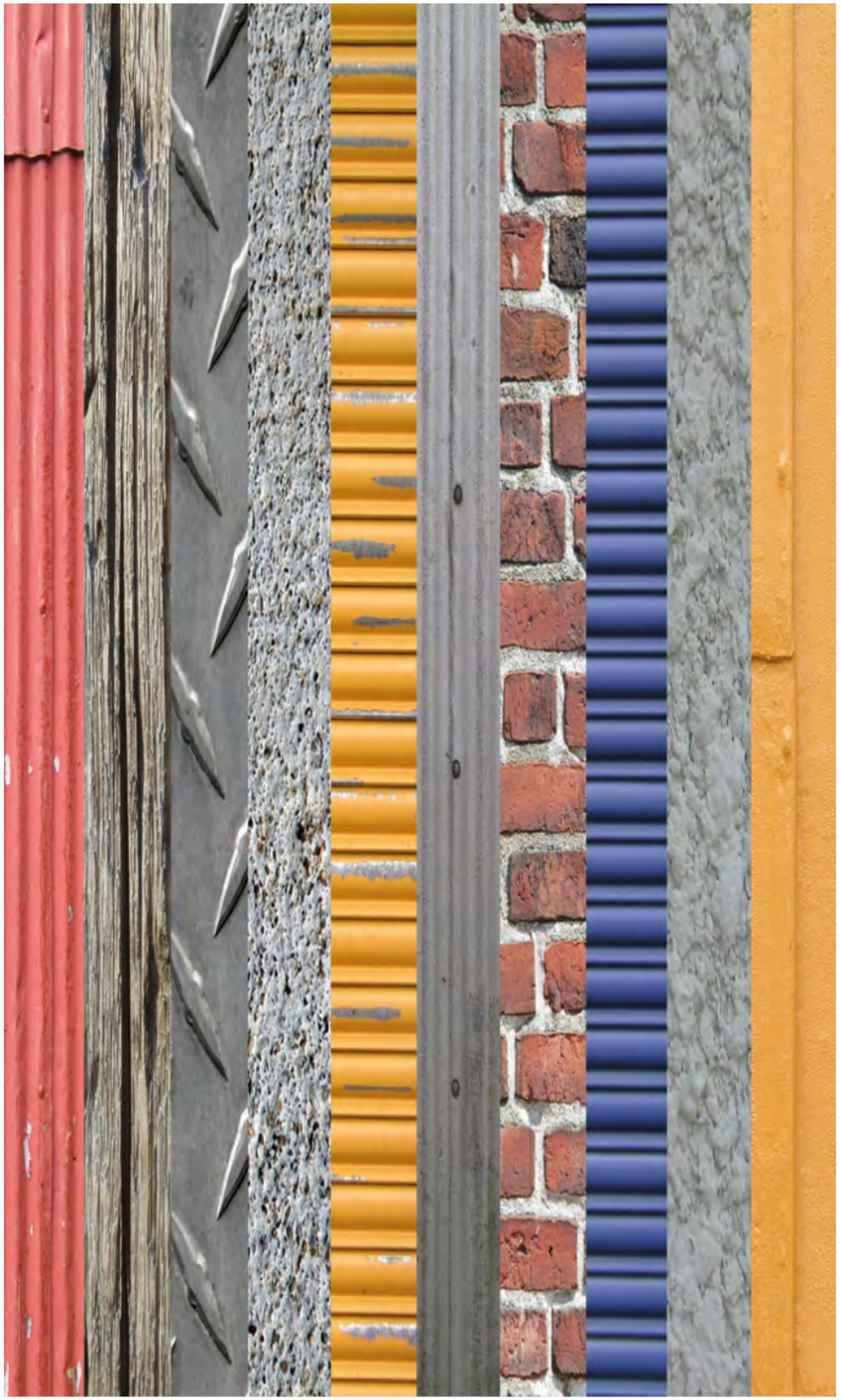


Figure 3.2.1 The various textures of industrial architecture

render them as rather unspectacular. While some industrial sites are more science fiction than reality—characterized by endless networks of snaking pipes, monstrous silos, bustling exhaust fans, boundless stretches of oversized metal boxes and massive smoke stacks—the majority of manufacturing occurs in locations that are initially unremarkable. While budgetary practices in conjunction with utilitarian modularization create a palimpsest of economical architecture, (understandably) to the un-inquisitive observer, the same structures appear more akin to formulaic infrastructure than architectural anomaly.

Typical of the landscapes of industrial production, the buildings themselves are content to remain in the realm of the formulaic. Smaller industries actively remove themselves from urban life with the help of local planning authorities as they are relegated to isolated industrial zones or industrial parks. Interesting in their own right—as these areas operate at a different scale from the majority of their host cities—industrial zones are rarely visited by outsiders. With essentially no public amenities or commercial activity, people who aren't employed there have little reason to "stop by" and take a stroll around industrial zones.

Heavier manufacturing requires larger plots of land than are often available in densely populated areas. As a result, large-scale manufacturers often situate themselves amongst the urban

peripheries or in secondary geographies where land is at a surplus.[6] Situated in these less populated regions, large-scale manufactures are allotted the freedom to build and do business as they please without drawing much attention from the larger population. One would be hard-pressed to find anyone who takes the time to make the sixty-mile trip from downtown Indianapolis to Marion (Indiana) to see General Motor's Stamping Facility in a city of fewer than thirty thousand.[7]

Able to procure large plots of land at relatively low costs, large-scale manufacturing endeavors come across as more speculative than their smaller urban counterparts. The large plots are not only to ensure sufficient space for the extensive infrastructures necessary to sustain such massive-scaled production projects, but also to provide ample room for what a production plant *might become*. Located relatively central in their expansive real estate, large-scale production facilities are positioned to allow for the highest number of possible structural formations. A singular building positioned in the middle of an oversized lot only wants to become bigger, as its size tends to directly correlate to its capital production. The small building calls out for more modules to be added on and transform it

6 Examples of smaller cities in which large-scale production facilities are located are Aloha, OR (IBM); Marion, IN (General Motors); Crete, NE (Friskies); Twin Bridges, MT (R.L. Winston Rod Company); Conyers, GA (Solo Cup); Skowhegan, ME (New Balance); Sand Springs, OK (Hargrove Manufacturing); and Garland, TX (Sherwin-Williams).

7 Marion's population was 29,948 as of the 2010 census. (A map of the GM Stamping Plant can be seen in Appendix B)

into a colossal industrial complex. Initially, it has no business calling such a large swatch of land its home, but it aspires to eventually grow beyond it.

As a result of this practice, hundreds, even thousands of feet are placed between well-traveled highways and their industrial neighbors. There is a buffer of empty land that sits between the passing observer in his car and the massive industrial structures that lay just beyond. In some cases (minus a few signs) the facilities can remain completely invisible to those who drive by. The industries themselves therefore maintain both a direct and indirect relationship to their bounding roads and highways. Relying on the network of interstate highways in order to ship their refined goods to market, the manufacturers are directly reliant upon the infrastructural advantage they provide. The roads are the veins that allow the facilities to spread to such remote locales. However, failing to assert their presence roadside, the industrial landscapes remove themselves completely from the public domain; they are there, but they prefer to reside as separate from their surrounding environments, avoiding any direct geographical attachment.

There have been attempts to broach this gap, but for the most part they fail to wholly integrate the landscapes of industrial production with the larger public. The most common technique to evoke public interest in manufacturing can be seen in the numerous "factory tours" that some companies offer of their facilities. Some

more progressive companies will pair their tours with product "museums" (such as Boeing's "Future of Flight Aviation Center" in Everett, Washington and General Motors' "National Corvette Museum" in Bowling Green, Kentucky) while other companies will construct "public pavilions" for consumers to come "See, Feel and Experience" the products and company history.[8]

While certainly admirable efforts at publicizing and marketing the 'production experience,' these efforts fall short of addressing the lopsided relationship between production and consumption—product and consumer. The goal of the factory tour is twofold, to illuminate the production process to the public and market the specific products that are being produced. However, for the industries themselves, it is the latter that tends to be the primary motivation behind factory tours. Unveiling the production process becomes a tool for corporate branding and marketing. The tour itself is often sold as a commodity or a privilege.

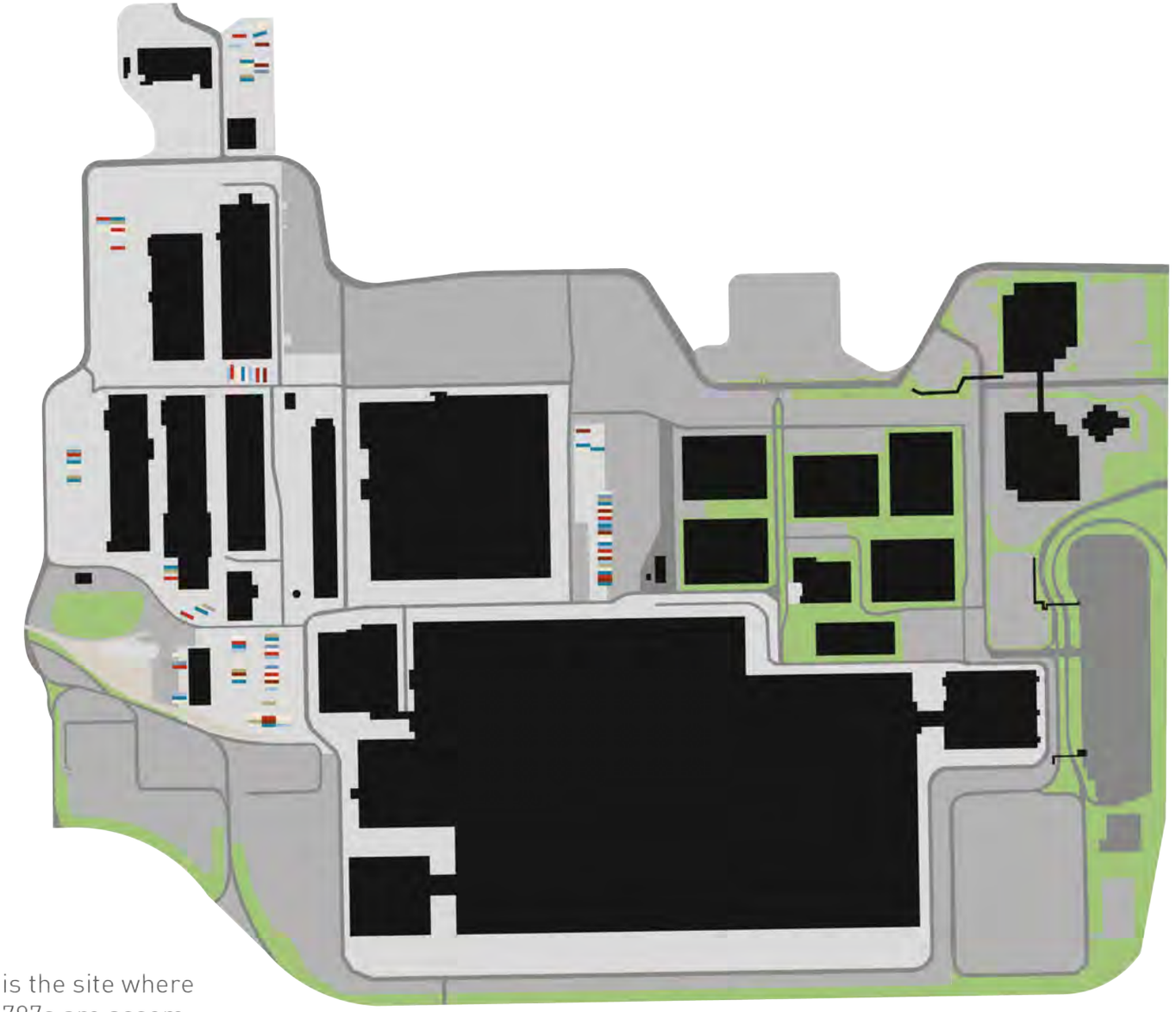
More importantly, the tour is a temporally restrictive event and often does little to evoke a re-imaging of the system as a whole. For a few hours visitors are educated as to the production process

8 The John Deere Pavilion in Moline, IL was constructed in 1997 and underwent a major redesign in early 2012. From the company's website: "(The) major redesign transformed the Pavilion creating a fresh, exciting, and entertaining new experience for guests to learn more about how we are all linked to the land. Today you'll get an up-close look at the company's global businesses and products, rich history and heritage, and solutions for the challenges of a growing planet. All new interactive displays, original artifacts, product simulators, an expanded children's area and a variety of media engage visitors in an entertaining learning environment for the whole family."

of a specific product (or line of products) and are given access to the accompanying museum or exhibition. While this helps to create a sense of pride in the physical objects and processes that are needed to manufacture them, overall, there is little attempt to tie the singular experience to a larger network of manufacturing and economics.

Tours, museums and public pavilions are a commendable foundation for transforming the landscapes of industrial production into public amenity, but for the most part these landscapes remain as distant outliers; either completely invisible or sites for brief moments of industrial voyeurism. What if these landscapes went out of their way to make sure they were publicly visible? What if spectacle was integrated into the production process to such an absurd extent that these places could not be ignored? If these foreign industrial locations became so facetiously visible that they were transformed from distant ignored abnormality to integral and frequented destinations? How could such an approach completely revolutionize the relationship between production and consumption?

Size reference, typical NYC block



BOEING FACTORY
(Everett, WA)

THE BIG...

Boeing's Everett facility is the site where its 747s, 767s, 777s and 787s are assembled. The central building (where the majority of assembly takes place) is the largest building in the world by volume at 13,385,378m^3 and covers 399,480m^2 (98.3 acres). Thus making it the prime example for large-scale industrial landscapes.

Size reference, typical NYC block

METOMIC CORPORATION
(Chicago, IL)

R.L. WINSTON ROD COMPANY
(Twin Bridges, MT)

HARGROVE MANUFACTURING
(Sand Springs, OK)

THE SMALL...

Three of the smallest mapped facilities, these industries represent smaller-scale production. From left to right: specialized brass and aluminum components, fishing rods, and ceramic logs for gas fireplaces. While considered small relative to the larger mapped industries, even these three buildings are formidable in size when compared to an average Manhattan block.

Size reference, typical NYC block

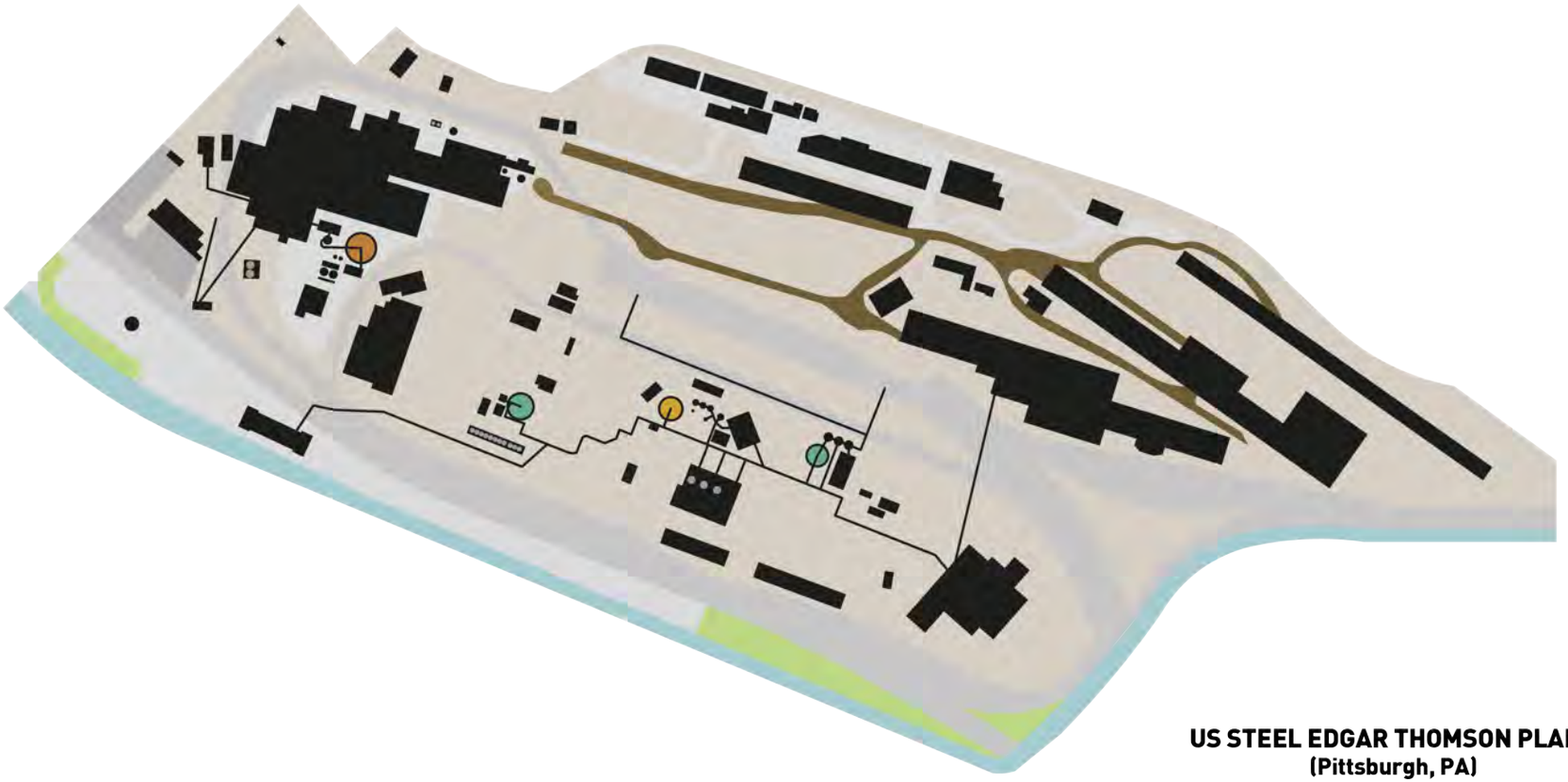
STEINWAY PIANO FACTORY
(Queens, NY)

SHERWIN-WILLIAMS PAINT FACTORY
(Garland, TX)

THE GRIDDED...

These two industries plug directly into their respective city grids. The smaller, more regular plots constrict the growth patterns of the buildings themselves, but their location on the grid often means closer proximity to their urban environments.

Size reference, typical NYC block



US STEEL EDGAR THOMSON PLANT
(Pittsburgh, PA)

THE AMOEBIC...

Often located out in the country or on the urban peripheries, these industrial sites take on near shapeless forms. Without a traditional grid in place, these plots are shaped by a combination of highways, rail lines and geographical features. Many of them (such as the US Steel Edgar Thomson Plant pictured above) tend to reside along bodies of water, letting the coast govern their shape.

Size reference, typical NYC block

WROUGHT WASHER MANUFACTURING
(Milwaukee, WI)

JIF PEANUTBUTTER PLANT
(Lexington, KY)

THE CRAMPED AND RESOURCEFUL...

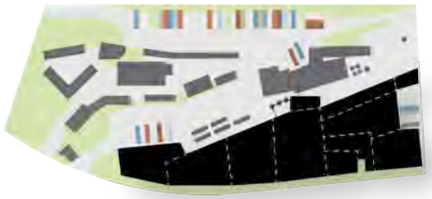
These industries are the most physically constricted. Unlike speculative industries that located amongst endless stretches of open space, these industries situate themselves in direct proximity to urban infrastructure such as interstate highways and rail lines. While making transportation easier, these infrastructural elements squeeze the industrial facilities.

Size reference, typical NYC block

GM ASSEMBLY PLANT
(Fort Wayne, IN)

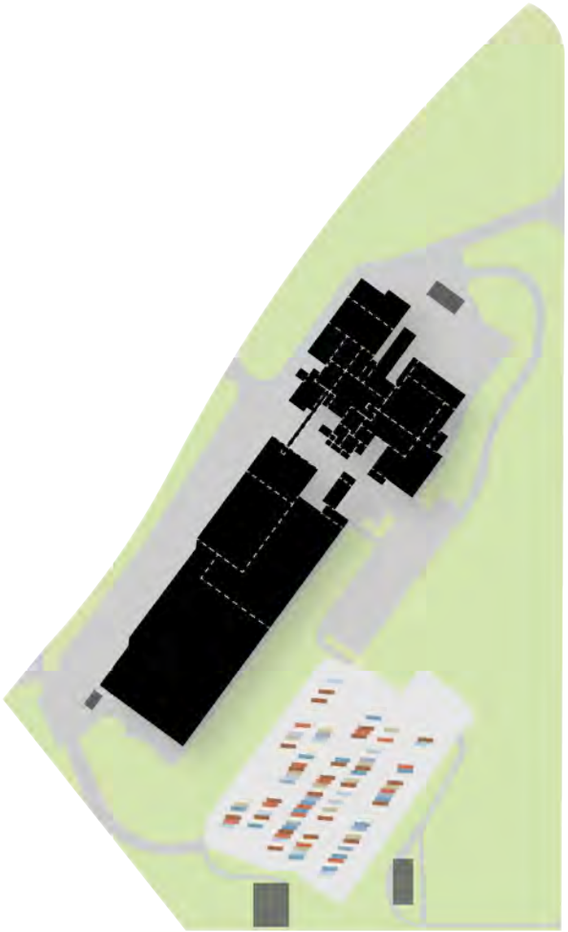
THE LARGE AND GREEDY...

These industries are large-scale manufacturers. However, with their increased scalars comes a more speculative attitude. Always wanting to be bigger (to grow) these greedy industrial landscapes occupy large plots of land (often outside of urban centers) hoping to one day expand to the boundaries of their oversized real estate.



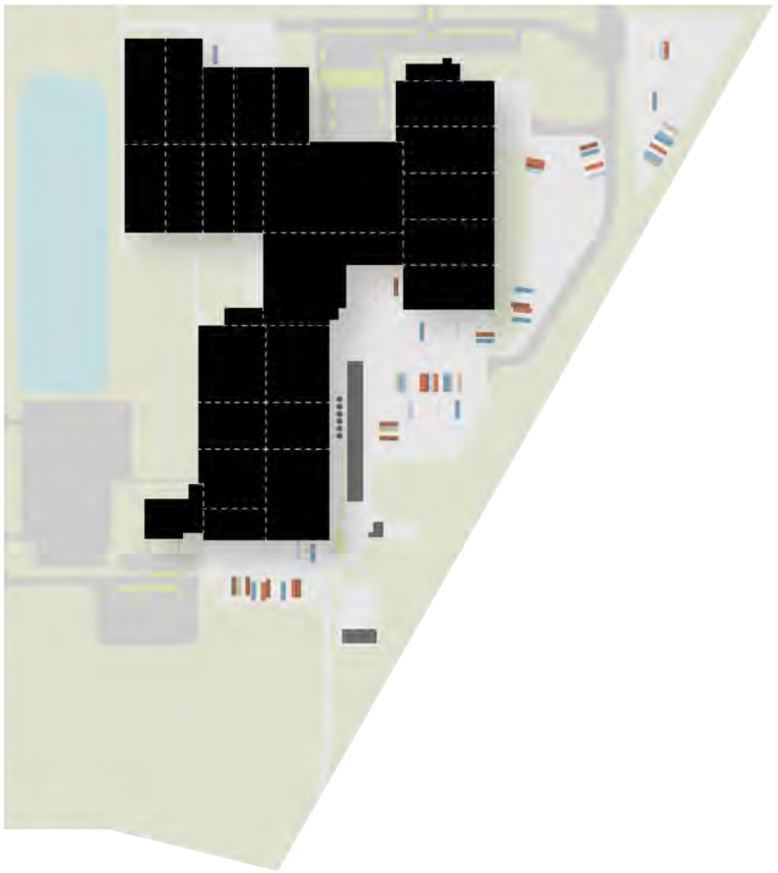
JIF PEANUT BUTTER PLANT
(Lexington, KY)

The 11 "modules" that make up the Jif Peanut Butter Plant in Lexington.

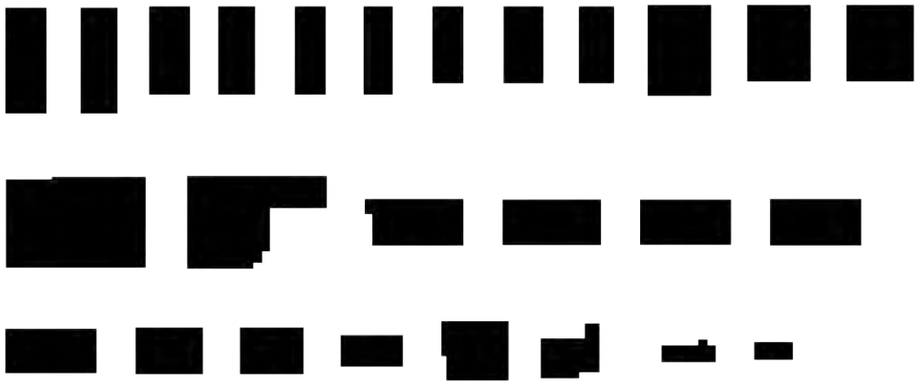


FRISKIES PET FOOD FACTORY
(Crete, NE)

The 36 "modules" that make up the Friskies Pet Food Plant in Crete.

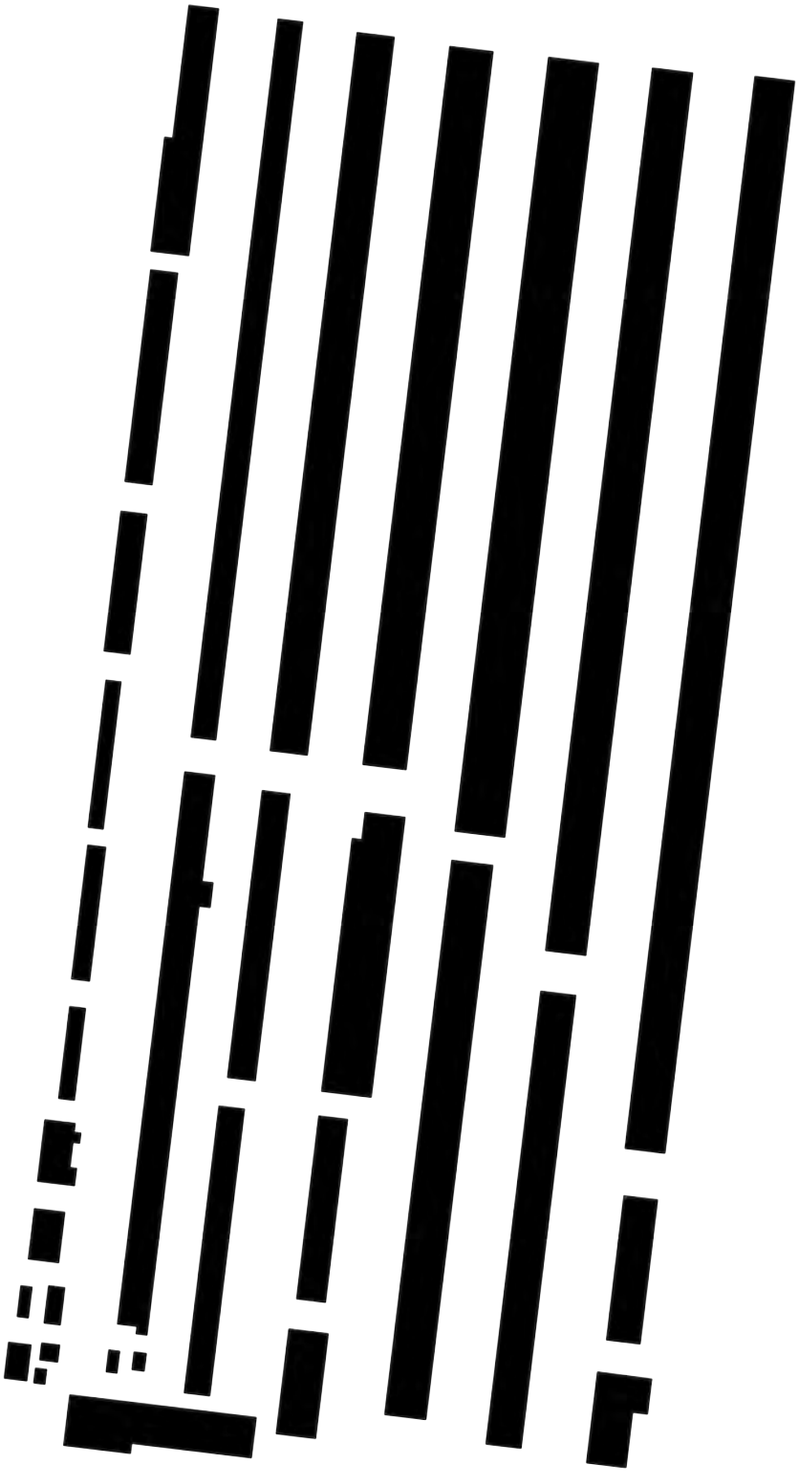


COLEMAN PLANT
(Wichita, KS)



The 26 "modules" that make up the Coleman Plant in Wichita.

US STEEL IRVIN PLANT
(Pittsburgh, PA)



The 32 "modules" that make up the US Steel Irvin Plant in Pittsburgh.

4:
INDUSTRIA:
THE LANDSCAPE OF INDUSTRIAL SPECTACLE

4.1:
THE HISTORY OF INDUSTRIA

Over the past twenty-five years the country of Dollaropia—a country nearly identical to America—has experienced a seismic shift in the culture surrounding its manufacturing economy. Located in the city of Edgeton, just twenty miles out of downtown Empire City, resides the imaginary landscape of Industria. An entirely new cultural and built typology, Industria can only be described as a *landscape of industrial spectacle*. While an entirely fictitious and absurdist creation, Industria re-imagines what the industrial typology *could be* if it adopted elements of consumer spectacle to operate in conjunction with the methods of production. Industria is the answer to a simple question: what if industrial landscapes went out of their way to make sure they were publicly visible? What would such a landscape look like and how would it change the relationship between manufacturer and consumer?[1*]

Despite its contemporary prominence, Industria emerged from very humble beginnings. It all began back in 1987 with the Dunn Motor Company (DM).[2] At the time, DM had fifty-two facilities across

1 * Please note, the following account of Industria, people and corporations involved are entirely fictional. Neither Industria nor the individuals or companies referenced exist beyond this narrative tale.

2 Dunn Motor Company, commonly known as DM, was founded in 1912 by Jonathon Dunn. Dunn had a simple vision: to make automobiles affordable and accessible to all Dollaropians. Today DM is a multi-billion dollar company with a multi-national presence. In 2010, DM produced over 5 million automobiles globally and employed roughly 215,000 employees at 93 plants and facilities worldwide. Some of their most popular models include the DM Blade™, H-320™,

Dollaropia and was looking to build their fifty-third. DM needed a new assembly plant to produce the first model of the DM Avro™. The plant would produce roughly 4,000 units a month and employ around 950 people. On the surface, it was a relatively modest assembly plant. However, DM had special plans for their fifty-third Dollaropian facility. Operating in an era of increasingly flexible capital, DM was accustomed to the fleeting nature of their manufacturing locales. It was essential that their facilities were malleable, able to expand, contract or completely disappear in accordance with economic shifts. As a result, their previous industrial complexes rarely responded to their surrounding environments, preferring geographic buoyancy to topographical stability.

In the context of an era of distinctively liquid capital, DM's fifty-third facility was largely regarded as experimental, a typological anomaly. Unlike the facilities before it, the new plant addressed a fundamental issue: in an age of flexible capital and invisible industry, what if a manufacturing facility were to go out of its way to make itself visible? What would such an aberration look like and how would it alter the methods of production? Today the success of DM's fifty-third plant are well documented, but at the time it was seen as a very risky move. Luckily, due to stable corporate growth and billions of dollars in corporate revenue, DM was able to absorb the risk and pursue their progressive vision that would eventually grow into the

Avro™ and the Shock™.

wildly popular Industria.

The essential goal of the exploratory facility was to retrofit elements of consumerism to the productionist model. Drawing on cultural trends of mass consumption and throwaway consumerism, DM aimed to mold their new facility in a spectacularized fashion to mirror that of commercial society; to appropriate the mass-appeal of consumer spectacle to their new manufacturing facility. The theory was that spectacle had the ability to transform a given place into a desirable destination. After gaining recognition as a 'destination' a facility would gain public appeal, which in turn could render the site as a cultural amenity. The widespread popularity and cultural significance would positively affect the brand as a whole.

While the majority of DM would remain flexible, the static and accessible nature of the new facility would make it the perfect location for DM's manufacturing sector to establish a public presence. The plant would serve as DM's 'industrial ambassador.' Anyone interested in getting a glimpse of went into producing a DM automobile would flock to the new facility where they would get hands on experience with DM's "world class manufacturing process." More than just a factory tour, the new facility would evoke aspects of spectacle in order to create a unique consumer experience, synthesizing elements of commercialism, recreation and industry into a single enterprise. As the company stated in its inaugural brochure advertising the plant:

> Where else would you go to experience the fascination that is DM from the first moment? You won't feel the sensation of the DM brand anywhere more than you do here. DM is something that has to be seen, heard, smelled, tasted and touched. That's the idea behind DM Edgeton, a place you won't easily forget. [3]

Located the exoburb of Edgeton for its proximity to both Empire City and the historical Interstate-0, the original DM Edgeton Assembly Plant utilized elements of spectacle in order to establish itself as a destination.[4, 5, 6] On a 716 acre plot pushed right up against I-0, the Edgeton plant sought to draw in tourists by employing a 'storefront aesthetic,' a commercialized feature rarely utilized in industrial architecture (*Image 4.1.1*). Traditionally, industrial buildings wanted to shield themselves from the public's gaze. Retreating to the center of their massive plots of land, industrial buildings hid behind solid walls of brick, steel and concrete in order

3 Clearly a quote adapted to accommodate the fictitious Dunn Motor Company, the quote is essentially a direct quote from the brochure for the BMW Welt facility in Munich, Germany. Replace "DM" with "BMW" and you get their advertisement for a very real place.

4 Empire City is the most populated city in Dollaropia with 6,692,932 permanent residents as of 2010. It is unequivocally the economic, cultural and entertainment capital of the country as well as its most attractive tourist destination.

5 Edgeton is located roughly twenty miles out of downtown Empire City. Originally developed as a suburb of the nearby metropolis, Edgeton has since developed into an independently functioning 'exoburb.' In 2010 the city had a population of 196,312. Of those, forty-three percent both lived and worked in the city.

6 Interstate-0 (I-0) was the first interstate highway constructed in Dollaropia. Built in 1957, I-0 has since been absorbed into an expansive network of a hundred interstate highways and over eight hundred major roadways. I-0 brings people from all over the region through Edgeton and into Empire City.

Image 4.1.1 A photograph taken in 1989 from the passenger seat of a car driving on Interstate-0. The image illustrates the initial impact of DM Edgeton's glass facade and the manufacturing processes it revealed.

to shield their innards from the outside world. Often located near urban and suburban geographies, the industrial typology strove to refute its own spatiality, physically part of the built environment, but culturally and programmatically invisible.

DM initially sought to challenge this practice by placing their facility directly adjacent to I-0. Rather than retreating from the public realm, DM Edgeton aimed to directly confront it. Their 716 acre plot was not regarded as a reclusive fortress, but rather as a speculative piece of real estate that could house a re-imagined industrial typology. Bordering the historic highway, the facility adopted a common commercial archetype, the storefront. Instead of massive walls of solid brick, DM Edgeton was constructed with a large glass façade; glorifying, not camouflaging, its largely mechanical interior. Driving down I-0 one could clearly see bits of metal and rubber travel along conveyor belts as automated machines and highly trained professionals transformed the component pieces into DM automobiles. The production process was made completely transparent, not an amorphous concept behind walls of steel and concrete, but rather as a public display used to market DM Edgeton. In combination with ample signage along the highway asserting the facility's existence, the glass frontage proclaimed that DM Edgeton was something to be publicly consumed, not disguised.

The facility itself provided visitors with ample recreational, educational and commercial opportunities. The fulcrum of DM

Edgeton's public program was a hands-on factory tour, known as the DM Experience and an industrially immersive restaurant, The Conveyor (*Image 4.1.2*). The DM Experience began in the visitor center, which also served as an interactive DM Museum. It was here that guests could explore the history of DM and interact with replicas of the automated machines and conveyors that were the life force of the assembly plant. Visitors would then be paired up with specially trained guides who would lead them on a specialized tour of the facility. Unlike other factory tours, the DM Edgeton tour was marketed as an "industrial experience." Scattered amongst the operational assembly equipment were workstations and scaled models that allowed guests to physically take part in some of the production methods they saw being utilized throughout the facility.

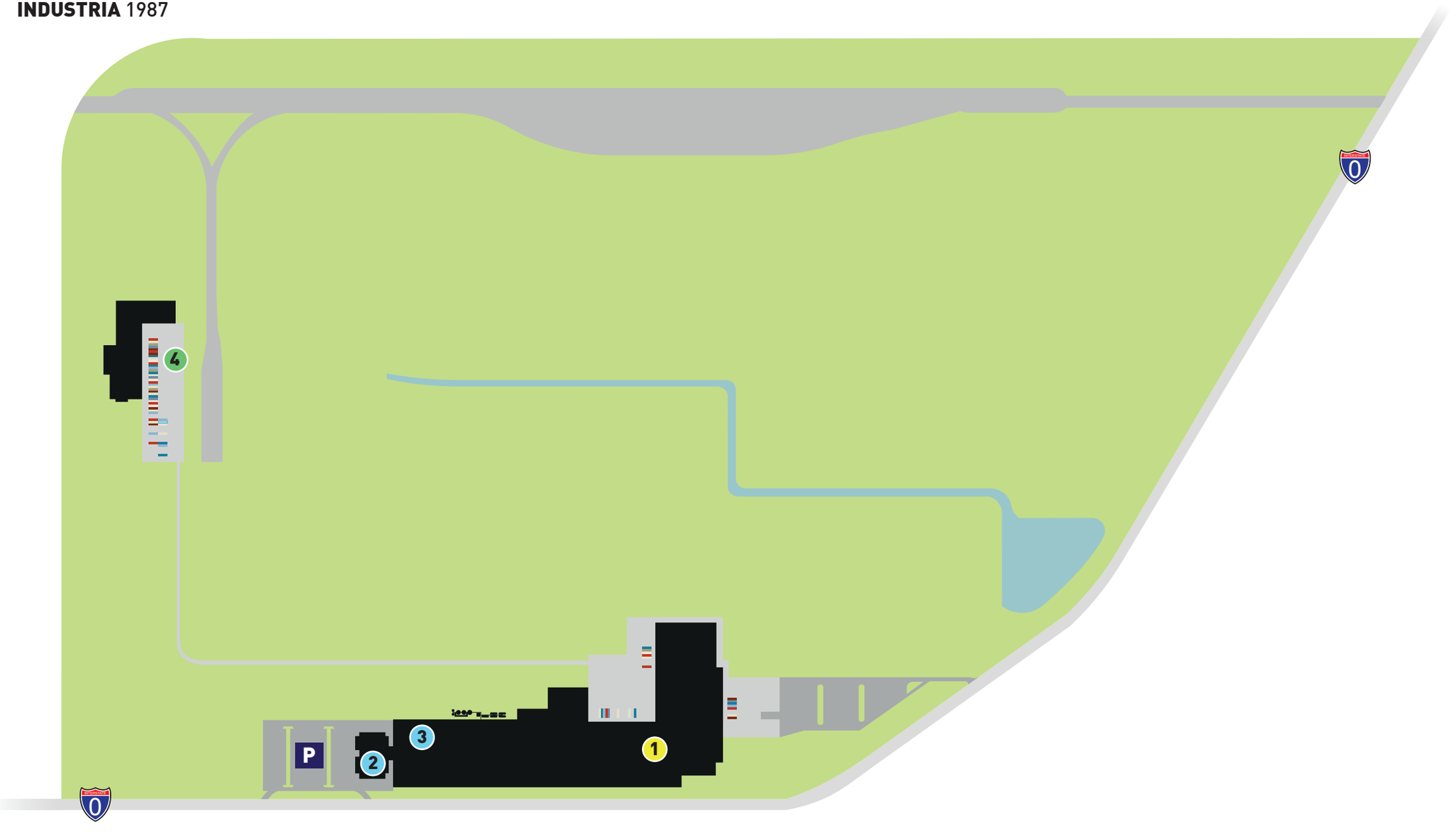
After the extensive tour, many of the guests chose to dine in the onsite restaurant, The Conveyor. Even with Empire City only twenty miles away, The Conveyor's exceptional chefs made it one of the best in the region. The spectacular food was accompanied by a visually immersive environment, which put the guests right in the middle of the bustling facility. Encased in soundproofed glass, The Conveyor allowed guests to dine amongst the mechanical bustle of the assembly plant; a truly unique dining experience that alone was worth the trip.

Along with the innovative appropriation of the glass storefront, these two unique programs steadily helped to spark public interest

in DM Edgeton. The subtle gestures laid the foundations for a new industrial typology. Over time, other industries became interested in what was happing at DM Edgeton and looked to relocate to DM's massive plot of land. Slowly but surely the Edgeton facility drew in new manufacturers, programs and private development before becoming the district of Industria that we know today.

Image 4.1.2 A couple dining in the Conveyor Restaurant only months after its opening. The happy couple are about to take a break from admiring the assembly line just beyond the soundproof glass in order to enjoy their salads.

INDUSTRIA 1987



INDUSTRIES	1 DUNN MOTOR COMPANY ASSEMBLY PLANT
ATTRACTIONS	2 DM EXPERIENCE CENTER
	3 THE CONVEYOR RESTAURANT
LOGISTICS	4 DISTRIBUTION

4.2:
INDUSTRIA: DOLLAROPIA'S PLAYGROUND

Exploding from its humble beginnings as the DM Edgeton Assembly Plant twenty-five years ago, the 716 acre has transformed into a unique wrinkle amongst an otherwise highly regular spatial fabric; today we know that wrinkle as Industria. Over the course of the past twenty-five years, Industria has drawn interest from varying industries of all different shapes and sizes, ranging from a potato chip factory, to a small fishing rod manufacturer and even a large metal stamping facility. Scattered amongst these functioning industries are spectacular attractions and public amenities that draw people from all over the country to the vast and unparalleled landscape of Industria. Now home to twenty-two industries, sixteen attractions, a hotel, hostel, vocational school, apartment complex, its own commercial district and an extensive personal rapid transit system known as IPRT (Industria Personal Rapid Transit), Industria is known as "Dollaropia's Industrial Playground." The initial vision that was DM Edgeton has since flourished into its own unique typological anomaly, unlike anything present in the contemporary urban and suburban environment: *the landscape of industrial spectacle*.

Part functioning industrial district, part amusement park, Industria has found innovative ways to integrate the public into its bustling district by incorporating elements of spectacle. What was

once the dull and elusive industrial typology has been re-imagined as a bustling public and cultural amenity. Utilizing the pixelated disposition of industrial architecture, Industria has largely been able to plug-in public programs and spectacular attractions to its otherwise fluid industrial district. Situated next to, on top of and within the numerous industrial facilities are museums, theme park attractions, shopping districts, rentable workshops, apartments and the expansive transit system that ties it all together.

Guests come from all over Dollaropia to visit the unique landscape of Industria. Hoping to get an in depth look at the landscapes of production, urban and suburban dwellers alike seek a retreat away from their consumptive homes to spend days, weeks and even months in Industria's spectacular facilities. Those who visit Industria get an unparalleled experience with the landscapes of production, which they will never forget. Arriving as widely uninformed consumers who know little of where their goods come from, guests leave with a thorough understanding of how and where their commodities are produced.

Those who visit Industria leave with a better understanding of the economic and cultural importance of Dollaropia's manufacturers, but most importantly, they develop a sense of pride in Dollaropian-made goods. According to Dollaropia's Bureau of Economic Analysis, people who have made extended visits to Industria are more conscientious consumers. Largely aware of how and where

INDUSTRIA 2012

their commodities originate, they are more likely to cherish their goods, opting to repair and alter them when necessary as opposed to throwing them away in favor of something else. What has resulted is an unprecedented infatuation with understanding how things work; an evocation of a form of intelligence that had been otherwise neglected since the shift away from physical manufacturing in the mid-seventies. Woodshops, metal works and machine shops are suddenly popular in schools again as the ability to physically create things has become an admirable trait and a professional advantage.

Industria has played a vital role in illuminating the landscapes of industrial production, which prior to its construction, were becoming increasingly invisible despite their vital economic and cultural importance. At the center of this transformation are the attractions that draw people to Industria, the most important of which might be the industrial facilities themselves. Not only are all of the onsite facilities open to public tours throughout the day, but they have been inspired by DM Edgeton's original design. Like the original manufacturing plant, almost all of the factories—both big and small—utilize a glass façade in order to maintain a direct correlation between the interiors of the factories, the district as a whole and Industria's guests. This is most obvious when traveling along Industria's "Small-Scale Way," a district that houses most of the small-scale manufacturers in the district. As one visitor put it after visiting last June:

> Strolling down Small-Scale Way, I felt as if I was on a traditional main street. However, the small parlors and shops had been replaced with exciting manufacturers. I could have sat for hours just watching the plethora of different goods being produced around me. As a matter of fact, if I don't recall, I think I spent about thirty minutes watching as one of the facilities produced various different plastic molds. It really was an exciting experience! [7]

However, Industria is much more than just the manufacturers that call it home. As a spectacularized landscape, Industria has sixteen theme park-like attractions. At the heart of these attractions is Industrial Village. Located in the center of Industria, just bellow the Conveyor Street shopping district, Industrial Village is home to half of Industria's attractions: the Mechanical Circus, the Production Line Rollercoaster, Machined Carousel, Silo Lake, Industrial Village Amphitheater, Observation Wheel, the Children's Build-A-Product Center, and the Manufacturing Museum. Of these central attractions, the Mechanical Circus (*Image 4.2.1*) is by far the most popular and most innovative. Constructed in 2007, the Mechanical Circus combines the technological innovations of industrial production

7 A quote from Randall Donohue who visited Industria in June of 2011. Donohue, a human resources representative for a bank, has made a promise to himself to become handier since visiting Industria. Even though he rode the Production Line over fifteen times during his five-day stay, he says his most memorable experience was the Adopt-A-Product program where he learned essentially all there is to know about the production of tractor engines. Almost a year later, "tractor engines" remains his go to conversation topic.

Image 4.2.1 The Mechanical Circus in 2008. The grand finale, amazed spectators watch in awe as the automated machines construct a spherical silo right before their eyes

with the excitement of the circus. Audience members sit and watch as conveyors and automated machines perform a combination of industrial techniques and appropriated circus acts.

Beyond these individual attractions is probably the most integral part of the Industria experience, the Adopt-A-Product Program. A progressive program that has been described by the Empire City Gazette as "A factory tour on steroids." Most guests' trips to Industria revolve around the program. Upon their arrival guests can request or be assigned a given product produced in Industria based on their preferences and the duration of their trip. They are then provided a liaison who helps to immerse them in their adopted-product, its history, material and component suppliers and the production methods used to produce it. They are given extensive tours of their assigned facility and gain hands on experience as to how their product is manufactured. The culmination of the program comes in the form of actually replicating the production process first hand. With the assistance of their liaison, guests produce a run of the product that goes to market with a special label denoting that it has been "adopted."

In addition to the more instrumental spectacles are a number of smaller attractions such as the Crane Simulator, Industrial Theater and of course, the original Conveyor Restaurant. Industria has also developed its own urban amenities, a hotel, hostel, commercial district, large apartment complex complete with

Image 4.2.2 A photograph of a father and son on the Chem-Tour in early 2010. The two take a break from stomping around the futuristic industrial oasis to capture this wonderful moment with the Observation Wheel and Production Line Rollercoaster visible in the background.

rentable workspaces and a vocational school that regularly hosts free courses and workshops. These facilities provide infrastructural support to both the thousands of employees who are there every day and the millions who visit Industria each year.

To travel between all of these locations Industria has constructed a comprehensive transit system known as IPRT. More than just a way to get from point-A to point-B, IPRT has become a popular attraction in its own right. Not always taking the most direct route from station to station, IPRT sometime goes out of its way to weave in and out of the surrounding factories (*Image 4.2.3*). Riding IPRT alone can serve as a cursory factory tour of the eight factories it cuts through. No matter where their going, guests are always aware of the methods of production just as industrial employees are made alert to their unique and exciting work environment. (For complete discriptions of Industria's industries, attractions and amenities, please see *Appendix D*)

These disparate artifacts come together to create the singular landscape of Industria. Not only a functioning industrial district, but a cultural symbol of Dollaropia, Industria has helped to instill a sense of pride and understanding in Dollaropia's manufacturing economy and the industrial landscapes that encompass it. It has appropriated aspects of rampant consumerism to the methods of production in order to re-brand industry as a public wonder rather than an un-glorified necessity. Subsequently Industria has uncovered a new

Image 4.2.3 The IPRT (Industria Personal Rapid Transit) in action cutting through one of eight factories as it makes its way around all 716 acres of Industria.

and exciting archetype, a new typological fabric, the *landscape of industrial spectacle*.

INDUSTRIA MAP 2012

INDUSTRIES

1 DUNN MOTOR COMPANY ASSEMBLY PLANT
2 STEEL TUBING AND SHEET MANUFACTURER
3 PIEZOELECTRICS
4 T-SHIRT MILL
5 FURNITURE WORKSHOP
6 WIND-UP TOY PRODUCER
7 POCKET KNIFE MANUFACTURER
8 DESKTOP SPEAKER FACTORY
9 WIRE AND ELECTRIC CABLE PRODUCER
10 PAPER MILL
11 PLASTIC MOLD PLANT
12 CUSTOM METAL FABRICATOR
13 SPECIALIZED BRASS COMPONENTS
14 SKATEBOARD DECK MANUFACTURER
15 FISHING ROD COMPANY
16 PAINT FACTORY
17 POTATO CHIP FACTORY
18 TRACTOR ENGINE MANUFACTURER
19 METAL STAMPING FACILITY
20 CHEMICAL FACTORY
21 FLASH MEMORY FACTORY
22 BEVERAGE BOTTLING PLANT

ATTRACTIONS

23 THE CONVEYOR RESTAURANT
24 MECHANICAL CIRCUS
25 THE PRODUCTION LINE
26 MACHINED CAROUSEL
27 SILO LAKE
28 INDUSTRIAL VILLAGE AMPHITHEATER
29 OBSERVATION WHEEL
30 CHILDREN'S BUILD-A-PRODUCT CENTER
31 MANUFACTURING MUSEUM
32 INDUSTRIAL THEATER
33 ADOPT-A-PRODUCT CENTER
34 SOUVENIR FACTORY
35 CRANE SIMULATOR
36 IPRT MAIN STATION
37 SCALED VILLAGE
38 CHEM-TOURS

AMENITIES

39 INDUSTRIA VOCATIONAL SCHOOL
40 CONVEYOR STREET RETAIL
41 MECHANICAL GARDENS APARTMENTS
42 FLEX-WORKSHOP SPACE
43 HOSTEL
44 INDUSTRIA HOTEL

LOGISTICS

45 DISTRIBUTION
46 DISTRIBUTION OFFICES

CONCLUSION

While a completely fictional and absurd concept, the idea of Industria provides an alternative vision to the common narrative that American industry is dead. Despite its unequivocal importance to the American economy and the physical massivity of its architectural proprietors, the fact that "American industry is dead" has become such a popular narrative is relatively surprising. Why is it that a decline has been interpreted as an obituary? The shift in regimes of capital accumulation from Fordism to Flexible Accumulation certainly doesn't help, as industrial landscapes have had to physically adjust and relocate in order to become formally fluid. A factory down the street from my house may be there now and may have been there for the past fifteen years, but given the flexible and destructive nature of capital, there is no assurance that it will be there a year from now. When considering the fleeting nature of these facilities, coupled with the fact that Flexible Accumulation has resulted in a fracturing of the production process to such an extent that the lineage of a given product is nearly impossible to trace, it is clearer as to why so many have come to regard these landscapes as already dead.

American manufacturing is certainly not nearly as prominent as it was fifty years ago and industry has definitely been restructured, but it is certainly not dead and as long as we continue to consume tangible goods, I imagine it won't be for some time. In addition to a

shift toward a regime of Flexible Accumulation, which has helped to guise the landscapes of industrial production, one must also consider that maybe these landscapes don't want to be found. They are far too content hiding behind an increasingly flexible system, choosing to focus their efforts on consumer spectacle over productional pride; certainly a tragic development when considering that as physical artifacts these industrial sites represent a completely unique and unexplored architecture. These uncategorized buildings are primarily defined by pixelated structures that are not only palimpsests of budgetary construction methods and materials, but speculative objects that directly correlate to otherwise elusive flows of capital.

The hypothetical landscape of Industria provides a brief glimpse at what could happen if these landscapes went out of their way to make their presence known. While certainly not the only way to re-imagine a more accesible industrial culture, Industria's fictional landscape provides a possible iteration for the landscape of industrial spectacle. Although I highly doubt we'll ever see a real Mechanical Circus, Chem-Tour or an Adopt-A-Product Program, the spectacularized ideas inherent in Industria aren't all that farfetched. Despite the schism between consumption and production, there have been small scale attempts to bridge the gap via spectacle. American companies like John Deere, Boeing, Ford and General Motors go above and beyond most other industries in providing

public tours of their facilities. They might not be the best-advertised programs or the most immersive tours, but they are certainly a start to establishing a new manufacturing narrative.

In Europe, places like BMW Welt (translated as BMW World) in Munich—located across the street from BMW's Munich Assembly Plant and the BMW Museum—provide a brief look at what a more realistic and commercial adaptation of what the landscape of industrial spectacle might look like. According to BMW, the BMW Welt facility combines a production forum, technology and design atelier, bistro, auditorium, international restaurant, coffee bar, business center, conference rooms, club restaurant, business club, automobile delivery floor and automobile presentation stage, into one architecturally unique building designed by Coop Himmelb(l)au in 2008 (*Image 5.1*). Straight from their own marketing material, BMW Welt is advertised as the only place one can go to, "Experience the world of BMW—with all your senses." The all-inclusive and architecturally fantastical facility is designed as the one-stop center for all things BMW; a place to glorify the brand and the mechanical processes that sustain it.

While maybe not as programmatically diverse as it is advertised and certainly a different typology than Industria, places like BMW Welt help to ground the ridiculous premise of the fictional industrial theme park in reality and suggest what industry *could be* if it were appropriated as part of the public realm as opposed

Image 5.1 An exterior and interior shot of BMW Welt in Munich, Germany.
[top source: www.BMWblog.com]
[bottom source: www.cartype.com]

to remaining distinctly separate. Today, the popular narrative may be that industry is dead, but there are encouraging signs that in the future the industrial landscapes of production can adopt a new typological language in order to ensure their recognition in public consciousness.

Appendix A: NAICS Codes and Titles

Entries in this *Appendix* are taken directly from the U.S. Census Bureau and are not my own words.

FOOD MANUFACTURING (NAICS 311):

Industries in the Food Manufacturing sub-sector transform livestock and agricultural products into products for intermediate or final consumption. The industry groups are distinguished by the raw materials (generally of animal or vegetable origin) processed into food products.

The food products manufactured in these establishments are typically sold to wholesalers or retailers for distribution to consumers, but establishments primarily engaged in retailing bakery and candy products made on the premises not for immediate consumption are included.

Industries contained under this sub-sector include: animal food; grain and oilseed milling; sugar and confectionary product; fruit and vegetable preserving and specialty food; dairy product; animal slaughtering and processing; seafood product preparation and packaging; bakeries and tortilla; and other food.

BEVERAGE AND TOBACCO PRODUCT MANUFACTURING (NAICS 312):

Industries in the Beverage and Tobacco Product Manufacturing sub-sector manufacture beverages and tobacco products. The industry group, Beverage Manufacturing, includes three types of establishments: (1) those that manufacture nonalcoholic beverages; (2) those that manufacture alcoholic beverages through the fermentation process; and (3) those that produce distilled alcoholic beverages. Ice manufacturing, while not a beverage, is included with nonalcoholic beverage manufacturing because it uses the same production process as water purification.

In the case of activities related to the manufacture of beverages, the structure follows the defined production processes. Brandy, a distilled beverage, was not placed under distillery product manufacturing, but rather under the NAICS class for winery product manufacturing since the production process used in the manufacturing of alcoholic grape-based beverages produces both wines (fermented beverage) and brandies (distilled beverage).

The industry group, Tobacco Manufacturing, includes two types of establishments: (1) those engaged in redrying and stemming tobacco and, (2) those that manufacture tobacco products, such as cigarettes and cigars.

Industries contained under this sub-sector include: beverage manufacturing and tobacco manufacturing

TEXTILE MILLS (NAICS 313):

Industries in the Textile Mills sub-sector group establishments that transform a basic fiber (natural or synthetic) into a product, such as yarn or fabric that is further manufactured into usabvle items, such as apparel, sheets, towels, and textile bags for individual or industrial consumption. The further manufacturing may be performed in the same establishment and classified in this sub-sector, or it may be performed at a separate establishment and be classified elsewhere in manufacturing. The main processes in this sub-sector include preparation and spinning of fiber, knitting or weaving of fabric, and the finishing of the textile.

Industries contained under this sub-sector include: fabric mills; fiber, yarn and thread mills; textile and fabric finishing and fabric coating mills

TEXTILE PRODUCT MILLS (NAICS 314):

Industries in the Textile Product Mills sub-sector group establishments that make textile products (except apparel). With a few exceptions, processes used in these industries are generally cut and sew (i.e., purchasing fabric and cutting and sewing to make non-apparel textile products, such as sheets and towels).

Industries contained under this sub-sector include: textile furnishing mills and other textile product mills

APPAREL MANUFACTURING (NAICS 315):

Industries in the Apparel Manufacturing sub-sector group establishments with two distinct manufacturing processes: (1) cut and sew (i.e., purchasing fabric and cutting and sewing to make a garment), and (2) the manufacture of garments in establishments that first knit fabric and then cut and sew the fabric into a garment. The Apparel Manufacturing sub-sector includes a diverse range of establishments manufacturing full lines of ready-to-wear apparel and custom apparel: apparel contractors, performing cutting or sewing operations on materials owned by others; jobbers performing entrepreneurial functions involved in apparel manufacture; and tailors, manufacturing custom garments for individual clients are all included. Knitting, when done alone, is classified in the Textile Mills sub-sector, but when knitting is combined with the production of complete garments, the activity is classified in Apparel Manufacturing.

Industries contained under this sub-sector include: apparel knitting mills; cut and sew apparel; and apparel accessories and other apparel

LEATHER AND ALLIED PRODUCT MANUFACTURING (NAICS 316):

Establishments in the Leather and Allied Product Manufacturing sub-sector transform hides into leather by tanning or curing and fabricating the leather into products for final consumption. It also includes the manufacture of similar products from other materials, including products (except apparel) made from "leather substitutes," such as rubber, plastics, or textiles. Rubber footwear, textile luggage, and plastics purses or wallets are examples of "leather substitute" products included in this group. The products made from leather substitutes are included in this sub-sector because they are made in similar ways leather products are made (e.g., luggage). They are made in the same establishments, so it is not practical to separate them.

The inclusion of leather making in this sub-sector is partly because leather tanning is a relatively small industry that has few close neighbors as a production process, partly because leather is an input to some of the other products classified in this sub-sector and partly for historical reasons.

Industries contained under this sub-sector include: leather and hide tanning and finishing; footwear; other leather and allied product

WOOD PRODUCT MANUFACTURING (NAICS 321):

Industries in the Wood Product Manufacturing sub-sector manufacture wood products, such as lumber, plywood, veneers, wood containers, wood flooring, wood trusses, manufactured homes (i.e., mobile homes), and prefabricated wood buildings. The production processes of the Wood Product Manufacturing sub-sector include sawing, planing, shaping, laminating, and assembling of wood products starting from logs that are cut into bolts, or lumber that then may be further cut, or shaped by lathes or other shaping tools. The lumber or other transformed wood shapes may also be subsequently planed or smoothed, and assembled into finished products, such as wood containers. The Wood Product Manufacturing sub-sector includes establishments that make wood products from logs and bolts that are sawed and shaped, and establishments that purchase sawed lumber and make wood products. With the exception of sawmills and wood preservation establishments, the establishments are grouped into industries mainly based on the specific products manufactured.

Industries contained under this sub-sector include: sawmills and wood preservation; veneer, plywood and engineered wood product; other wood product

PAPER MANUFACTURING (NAICS 322):

Industries in the Paper Manufacturing sub-sector make pulp, paper, or converted paper products. The manufacturing of these products is grouped together because they constitute a series of vertically connected processes. More than one is often carried out in a single establishment. There are essentially three activities. The manufacturing of pulp involves separating the cellulose fibers from other impurities in wood or used paper. The manufacturing of paper involves matting

these fibers into a sheet. Converted paper products are made from paper and other materials by various cutting and shaping techniques and includes coating and laminating activities.

Industries contained under this sub-sector include: pulp, paper and paperboard mills; converted paper product

PRINTING AND RELATED SUPPORT ACTIVITIES (NAICS 323):

Industries in the Printing and Related Support Activities sub-sector print products, such as newspapers, books, labels, business cards, stationery, business forms, and other materials, and perform support activities, such as data imaging, platemaking services, and bookbinding. The support activities included here are an integral part of the printing industry, and a product (a printing plate, a bound book, or a computer disk or file) that is an integral part of the printing industry is almost always provided by these operations.

Processes used in printing include a variety of methods used to transfer an image from a plate, screen, film, or computer file to some medium, such as paper, plastics, metal, textile articles, or wood. The most prominent of these methods is to transfer the image from a plate or screen to the medium (lithographic, gravure, screen, and flexographic printing). A rapidly growing new technology uses a computer file to directly "drive" the printing mechanism to create the image and new electrostatic and other types of equipment (digital or nonimpact printing).

Publishing is excluded from this sub-sector. Though printing and publishing are often carried out by the same enterprise (a newspaper, for example), it is less and less the case that these distinct activities are carried out in the same establishment. However, this sub-sector includes printing on clothing because the production process for that activity is printing, not clothing manufacturing. For instance, the printing of T-shirts is included in this sub-sector. In contrast, printing on fabric (or grey goods) is not included.

PETROLEUM AND COAL PRODUCTS MANUFACTURING (NAICS 324):

The Petroleum and Coal Products Manufacturing sub-sector is based on the transformation of crude petroleum and coal into usable products. The dominant process is petroleum refining that involves the separation of crude petroleum into component products through such techniques as cracking and distillation.

In addition, this sub-sector includes establishments that primarily further process refined petroleum and coal products and produce products, such as asphalt coatings and petroleum lubricating oils. However, establishments that manufacture petrochemicals from refined petroleum are not included.

CHEMICAL MANUFACTURING (NAICS 325):

The Chemical Manufacturing sub-sector is based on the transformation of organic and inorganic raw materials by a chemical process and the formulation of products. This sub-sector distinguishes the production of basic chemicals that comprise the first industry group from the production of intermediate and end products produced by further processing of basic chemicals that make up the remaining industry groups. This sub-sector does not include all industries transforming raw materials by a chemical process.

Industries contained under this sub-sector include: basic chemical; resin, synthetic rubber and artificial synthetic fibers and filaments; pesticide, fertilizer and other agricultural chemical; pharmaceutical and medicine; paint, coating and adhesive; soap, cleaning compound and toilet preparation; and other chemical product preparation

PLASTICS AND RUBBER PRODUCTS MANUFACTURING (NAICS 326):

Industries in the Plastics and Rubber Products Manufacturing sub-sector make goods by processing plastics materials and raw rubber. The core technology employed by establishments in this sub-sector is that of plastics or rubber product production. Plastics and rubber are combined in the same sub-sector because plastics are increasingly being used as a substitute for rubber; however the sub-sector is generally restricted to the production of products made of just one material, either solely plastics or rubber.

Many manufacturing activities use plastics or rubber, for example the manufacture of footwear, or furniture. Typically, the production process of these products involves more than one material. In these cases, technologies that allow disparate materials to be formed and combined are of central importance in describing the manufacturing activity. In NAICS, such activities (the footwear and furniture manufacturing) are not classified in the Plastics and Rubber Products Manufacturing sub-sector because the core technologies for these activities are diverse and involve multiple materials.

Industries contained under this sub-sector include: plastics product and rubber product

NONMETALLIC MINERAL PRODUCTS MANUFACTURING (NAICS 327):

The Nonmetallic Mineral Product Manufacturing sub-sector transforms mined or quarried nonmetallic minerals, such as sand, gravel, stone, clay, and refractory materials, into products for intermediate or final consumption. Processes used include grinding, mixing, cutting, shaping, and honing. Heat often is used in the process and chemicals are frequently mixed to change the composition, purity, and chemical properties for the intended product. For example, glass is produced by heating silica sand to the melting point (sometimes combined with cullet or

recycled glass) and then drawn, floated, or blow molded to the desired shape or thickness. Refractory materials are heated and then formed into bricks or other shapes for use in industrial applications.

The Nonmetallic Mineral Product Manufacturing sub-sector includes establishments that manufacture products, such as bricks, refractories, ceramic products, and glass and glass products, such as plate glass and containers. Also included are cement and concrete products, lime, gypsum and other nonmetallic mineral products including abrasive products, ceramic plumbing fixtures, statuary, cut stone products, and mineral wool. The products are used in a wide range of activities from construction and heavy and light manufacturing to articles for personal use.

Mining, beneficiating, and manufacturing activities often occur in a single location. Separate receipts will be collected for these activities whenever possible. When receipts cannot be broken out between mining and manufacturing, establishments that mine or quarry nonmetallic minerals, beneficiate the nonmetallic minerals and further process the nonmetallic minerals into a more finished manufactured product are classified based on the primary activity of the establishment. A mine that manufactures a small amount of finished products will be classified in Sector 21, Mining, Quarrying, and Oil and Gas Extraction. An establishment that mines whose primary output is a more finished manufactured product will be classified in the Manufacturing Sector.

Excluded from the Nonmetallic Mineral Product Manufacturing sub-sector are establishments that primarily beneficiate mined nonmetallic minerals. Beneficiation is the process whereby the extracted material is reduced to particles that can be separated into mineral and waste, the former suitable for further processing or direct use

Industries contained under this sub-sector include: clay product and refractory; glass and glass product; cement and concrete product; lime and gypsum product; and other nonmetallic mineral product

PRIMARY METAL MANUFACTURING (NAICS 331):

Industries in the Primary Metal Manufacturing sub-sector smelt and/or refine ferrous and nonferrous metals from ore, pig or scrap, using electrometallurgical and other process metallurgical techniques. Establishments in this sub-sector also manufacture metal alloys and super-alloys by introducing other chemical elements to pure metals. The output of smelting and refining, usually in ingot form, is used in rolling, drawing, and extruding operations to make sheet, strip, bar, rod, or wire, and in molten form to make castings and other basic metal products.

Primary manufacturing of ferrous and nonferrous metals begins with ore or concentrate as the primary input. Establishments manufacturing primary metals from ore and/or concentrate remain classified in the primary smelting, primary refining, or iron and steel mill industries regardless of the form of their output. Establishments primarily engaged in secondary smelting and/or secondary refining recover ferrous and nonferrous metals from scrap and/or dross. The output of the secondary smelting and/or secondary refining industries is limited to

shapes, such as ingot or billet, that will be further processed. Recovery of metals from scrap often occurs in establishments that are primarily engaged in activities, such as rolling, drawing, extruding, or similar processes. Excluded from the Primary Metal Manufacturing sub-sector are establishments primarily engaged in manufacturing ferrous and nonferrous forgings (except ferrous forgings made in steel mills) and stampings.

Industries contained under this sub-sector include: iron and steel mills and ferroalloy; steel product from purchased steel; alumina and aluminum production and processing; nonferrous metal (except aluminum) production and processing; and foundries

FABRICATED METAL PRODUCT MANUFACTURING (NAICS 332):

Industries in the Fabricated Metal Product Manufacturing sub-sector transform metal into intermediate or end products, other than machinery, computers and electronics, and metal furniture, or treat metals and metal formed products fabricated elsewhere. Important fabricated metal processes are forging, stamping, bending, forming, and machining, used to shape individual pieces of metal; and other processes, such as welding and assembling, used to join separate parts together. Establishments in this sub-sector may use one of these processes or a combination of these processes.

The NAICS structure for this sub-sector distinguishes the forging and stamping processes in a single industry. The remaining industries in the sub-sector group establishments based on similar combinations of processes used to make products.

The manufacturing performed in the Fabricated Metal Product Manufacturing sub-sector begins with manufactured metal shapes. The establishments in this sub-sector further fabricate the purchased metal shapes into a product. For instance, the Spring and Wire Product Manufacturing industry starts with wire and fabricates such items.

Within manufacturing there are other establishments that make the same products made by this sub-sector; only these establishments begin production further back in the production process. These establishments have a more integrated operation. For instance, one establishment may manufacture steel, draw it into wire, and make wire products in the same establishment. Such operations are classified in the Primary Metal Manufacturing sub-sector.

Industries contained under this sub-sector include: forging and stamping; cutlery and handtool; architectural and structural metals; boiler, tank and shipping container; hardware; spring and wire product; machine shops, turned product and screw, nut and bolt; coating, engraving, heat treating and allied activities; and other fabricated metal product

MACHINERY MANUFACTURING (NAICS 333):

Industries in the Machinery Manufacturing sub-sector create end products that apply mechanical force, for example, the application of gears and levers, to perform work. Some important processes for the manufacture of machinery are forging, stamping, bending, forming, and machining that are used to shape individual pieces of metal. Processes, such as welding and assembling are used to join separate parts together. Although these processes are similar to those used in metal fabricating establishments, machinery manufacturing is different because it typically employs multiple metal forming processes in manufacturing the various parts of the machine. Moreover, complex assembly operations are an inherent part of the production process.

In general, design considerations are very important in machinery production. Establishments specialize in making machinery designed for particular applications. Thus, design is considered to be part of the production process for the purpose of implementing NAICS. The NAICS structure reflects this by defining industries and industry groups that make machinery for different applications. A broad distinction exists between machinery that is generally used in a variety of industrial applications (i.e., general purpose machinery) and machinery that is designed to be used in a particular industry (i.e., special purpose machinery). Three industry groups consist of special purpose machinery--Agricultural, Construction, and Mining Machinery Manufacturing; Industrial Machinery Manufacturing; and Commercial and Service Industry Machinery Manufacturing. The other industry groups make general-purpose machinery: Ventilation, Heating, Air Conditioning, and Commercial Refrigeration Equipment Manufacturing; Metalworking Machinery Manufacturing; Engine, Turbine, and Power Transmission Equipment Manufacturing; and Other General Purpose Machinery Manufacturing.

Industries contained under this sub-sector include: agriculture, construction and mining machinery; industrial machinery; commercial and service industry machinery; ventilation, heating, air-conditioning and commercial refrigeration equipment; metalworking machinery; engine, turbine and power transmission equipment; and other general purpose machinery

COMPUTER AND ELECTRONIC PRODUCT MANUFACTURING (NAICS 334):

Industries in the Computer and Electronic Product Manufacturing sub-sector group establishments that manufacture computers, computer peripherals, communications equipment, and similar electronic products, and establishments that manufacture components for such products. The Computer and Electronic Product Manufacturing industries have been combined in the hierarchy of NAICS because of the economic significance they have attained. Their rapid growth suggests that they will become even more important to the economies of all three North American countries in the future, and in addition their manufacturing processes are fundamentally different from the manufacturing processes of other machinery and equipment. The design and use of integrated circuits and the application of highly specialized miniaturization technologies are common elements in the production technologies of the computer and electronic sub-

sector. Convergence of technology motivates this NAICS sub-sector. Digitalization of sound recording, for example, causes both the medium (the compact disc) and the equipment to resemble the technologies for recording, storing, transmitting, and manipulating data. Communications technology and equipment have been converging with computer technology. When technologically-related components are in the same sector, it makes it easier to adjust the classification for future changes, without needing to redefine its basic structure. The creation of the Computer and Electronic Product Manufacturing sub-sector assists in delineating new and emerging industries because the activities that will serve as the probable sources of new industries, such as computer manufacturing and communications equipment manufacturing, or computers and audio equipment, are brought together. As new activities emerge, they are less likely therefore, to cross the sub-sector boundaries of the classification.

Industries contained under this sub-sector include: computer and peripheral equipment; communications equipment; audio and video equipment; semiconductor and other electronic component; navigational, measuring, electromedical and control instruments; and manufacturing and reproducing magnetic and optical media

ELECTRICAL EQUIPMENT, APPLIANCE AND COMPONENT MANUFACTURING (NAICS 335):

Industries in the Electrical Equipment, Appliance, and Component Manufacturing sub-sector manufacture products that generate, distribute and use electrical power. Electric Lighting Equipment Manufacturing establishments produce electric lamp bulbs, lighting fixtures, and parts. Household Appliance Manufacturing establishments make both small and major electrical appliances and parts. Electrical Equipment Manufacturing establishments make goods, such as electric motors, generators, transformers, and switchgear apparatus. Other Electrical Equipment and Component Manufacturing establishments make devices for storing electrical power (e.g., batteries), for transmitting electricity (e.g., insulated wire), and wiring devices (e.g., electrical outlets, fuse boxes, and light switches).

Industries contained under this sub-sector include: electrical lighting equipment; household appliance; electrical equipment; and other electrical equipment component

TRANSPORTATION EQUIPMENT MANUFACTURING (NAICS 336):

Industries in the Transportation Equipment Manufacturing sub-sector produce equipment for transporting people and goods. Transportation equipment is a type of machinery. An entire sub-sector is devoted to this activity because of the significance of its economic size in all three North American countries.

Establishments in this sub-sector utilize production processes similar to those of other machinery manufacturing establishments - bending, forming, welding, machining, and assembling metal or plastic parts into components and finished products. However, the assembly of components and subassemblies and their

further assembly into finished vehicles tends to be a more common production process in this sub-sector than in the Machinery Manufacturing sub-sector.

NAICS has industry groups for the manufacture of equipment for each mode of transport - road, rail, air and water. Parts for motor vehicles warrant a separate industry group because of their importance and because parts manufacture requires less assembly, and the establishments that manufacture only parts are not as vertically integrated as those that make complete vehicles.

Land use motor vehicle equipment not designed for highway operation (e.g., agricultural equipment, construction equipment, and materials handling equipment) is classified in the appropriate NAICS sub-sector based on the type and use of the equipment.

Industries contained under this sub-sector include: motor vehicle; motor vehicle body and trailer; motor vehicle parts; aerospace product and parts; railroad rolling stock; ship and boat building; and other transportation equipment

FURNITURE RELATED PRODUCT MANUFACTURING (NAICS 337):

Industries in the Furniture and Related Product Manufacturing sub-sector make furniture and related articles, such as mattresses, window blinds, cabinets, and fixtures. The processes used in the manufacture of furniture include the cutting, bending, molding, laminating, and assembly of such materials as wood, metal, glass, plastics, and rattan. However, the production process for furniture is not solely bending metal, cutting and shaping wood, or extruding and molding plastics. Design and fashion trends play an important part in the production of furniture. The integrated design of the article for both esthetic and functional qualities is also a major part of the process of manufacturing furniture. Design services may be performed by the furniture establishment's work force or may be purchased from industrial designers.

Furniture may be made of any material, but the most common ones used in North America are metal and wood. Furniture manufacturing establishments may specialize in making articles primarily from one material. Some of the equipment required to make a wooden table, for example, is different from that used to make a metal one. However, furniture is usually made from several materials. A wooden table might have metal brackets, and a wooden chair a fabric or plastics seat. Therefore, in NAICS, furniture initially is classified based on the type of furniture (application for which it is designed) rather than the material used. For example, an upholstered sofa is treated as household furniture, although it may also be used in hotels or offices.

When classifying furniture according to the component material from which it is made, furniture made from more than one material is classified based on the material used in the frame, or if there is no frame, the predominant component material. Upholstered household furniture (excluding kitchen and dining room chairs with upholstered seats) is classified without regard to the frame material. Kitchen or dining room chairs with upholstered seats are classified according to the frame material. Furniture may be made on a stock or custom basis and may be shipped assembled or unassembled (i.e., knockdown). The manufacture of

furniture parts and frames is included in this sub-sector.

Industries contained under this sub-sector include: household and institutional furniture and kitchen cabinet; office furniture (including fixtures); and other furniture related product

MISCELLANEOUS MANUFACTURING (NAICS 339):

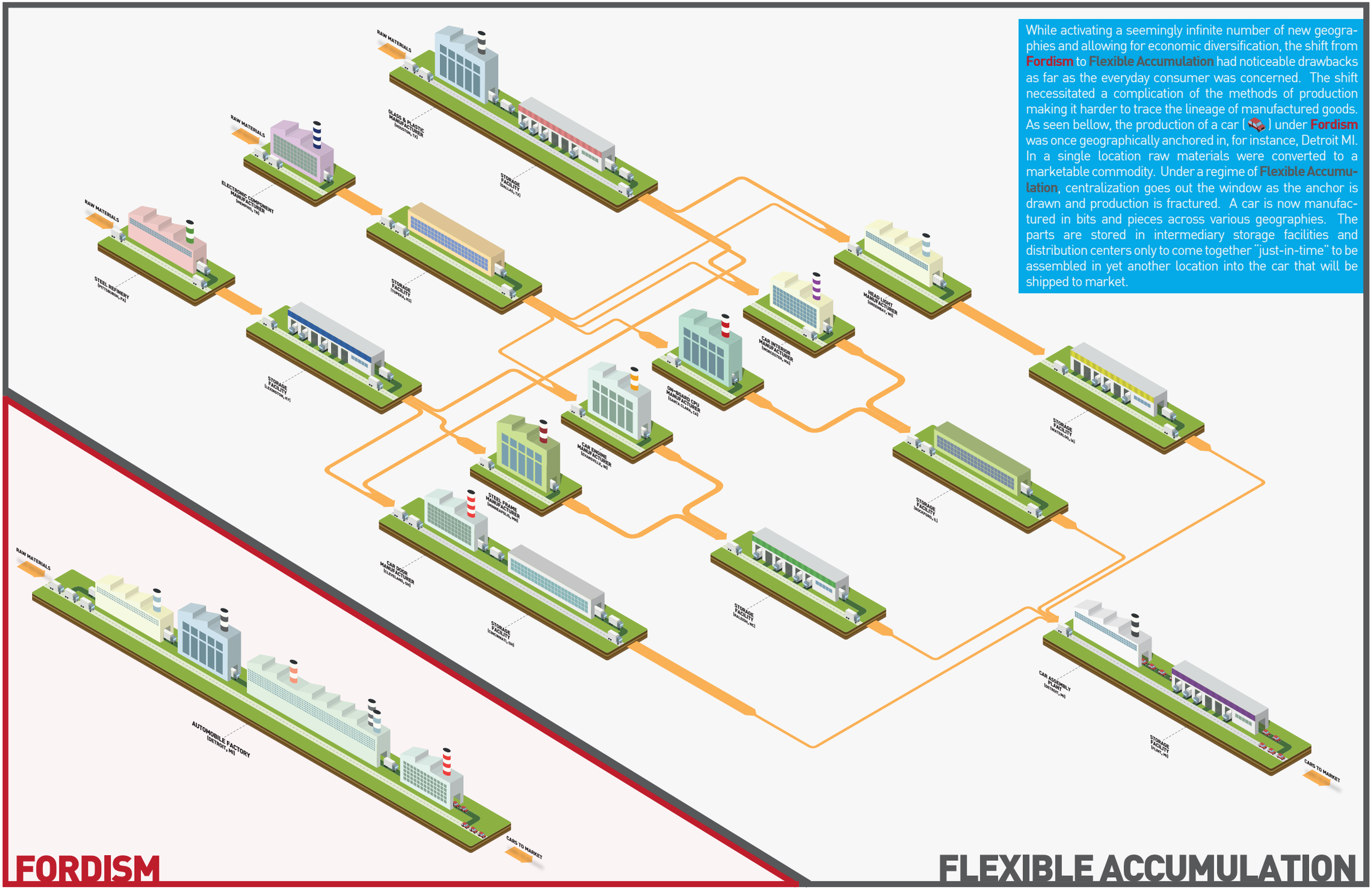
Industries in the Miscellaneous Manufacturing sub-sector make a wide range of products that cannot readily be classified in specific NAICS sub-sectors in manufacturing. Processes used by these establishments vary significantly, both among and within industries. For example, a variety of manufacturing processes are used in manufacturing sporting and athletic goods that include products such as tennis racquets and golf balls. The processes for these products differ from each other, and the processes differ significantly from the fabrication processes used in making dolls or toys, the melting and shaping of precious metals to make jewelry, and the bending, forming, and assembly used in making medical products.

The industries in this sub-sector are defined by what is made rather than how it is made. Although individual establishments might be appropriately classified elsewhere in the NAICS structure, for historical continuity, these product-based industries were maintained. In most cases, no one process or material predominates for an industry.

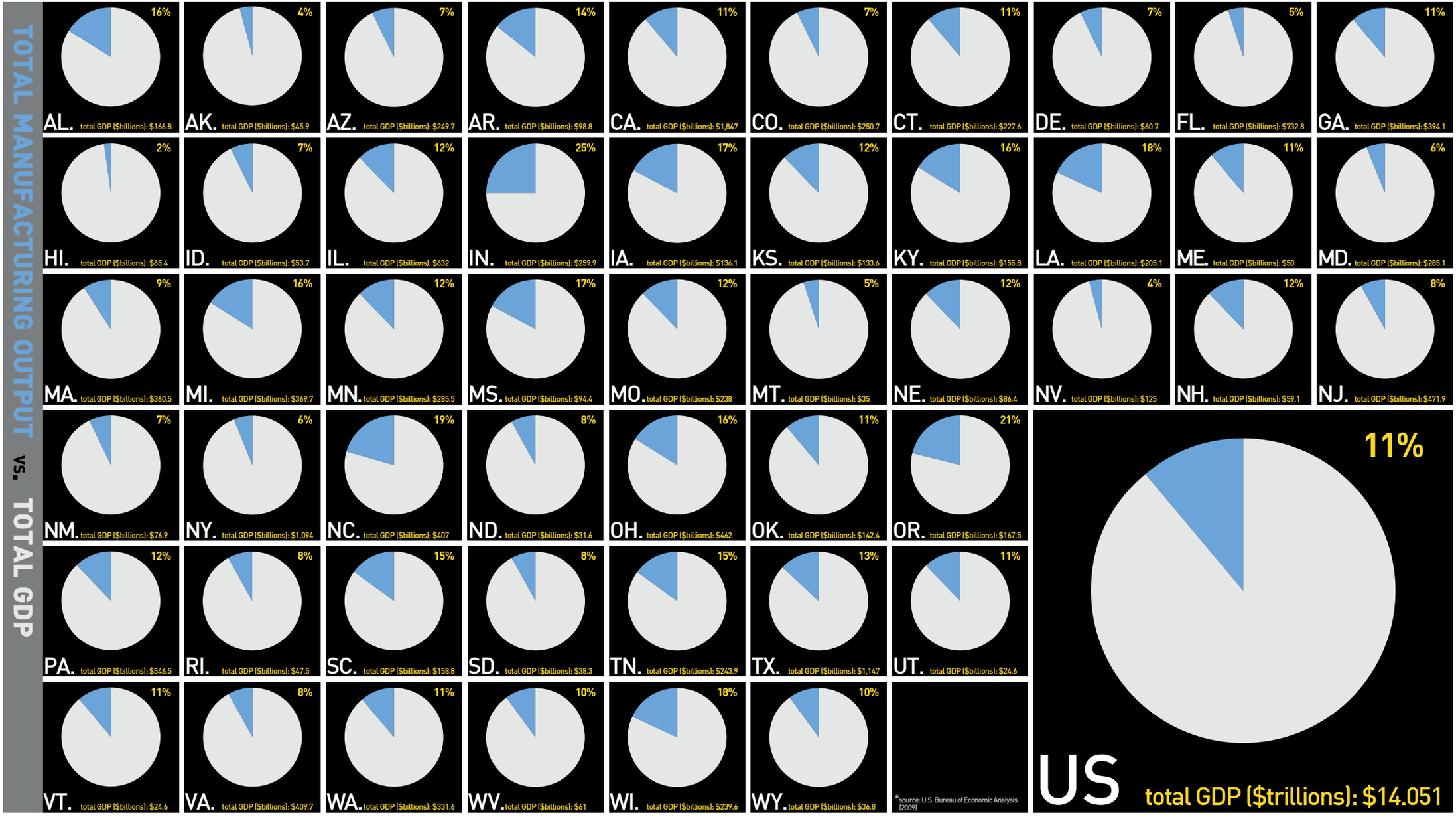
Establishments in this sub-sector manufacture products as diverse as medical equipment and supplies, jewelry, sporting goods, toys, and office supplies.

Industries contained under this sub-sector include: medical equipment and supplies ad other miscellaneous

Appendix B: Manufacturing Infographics

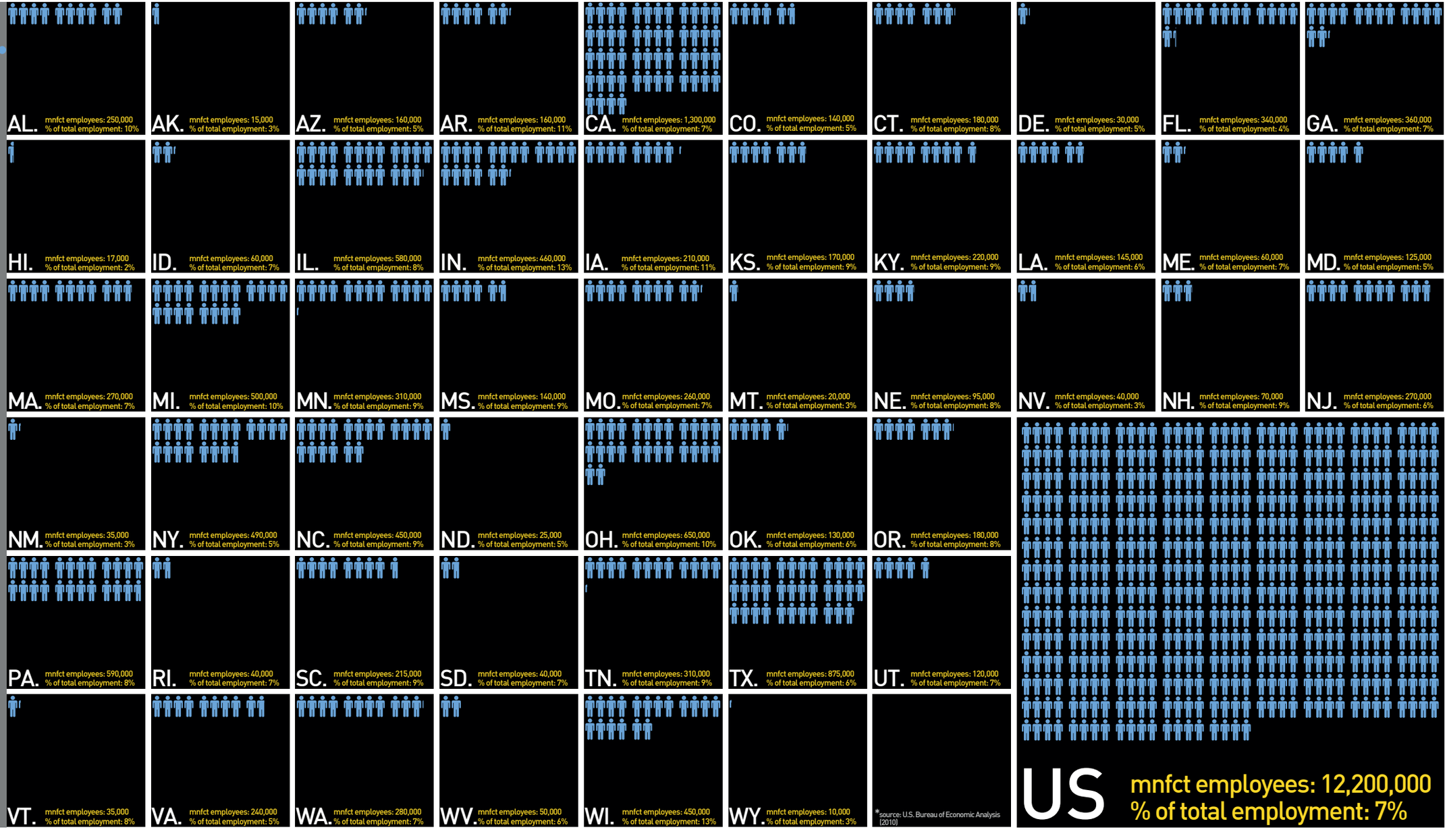


MANUFACTURING PERCENT OF TOTAL GDP

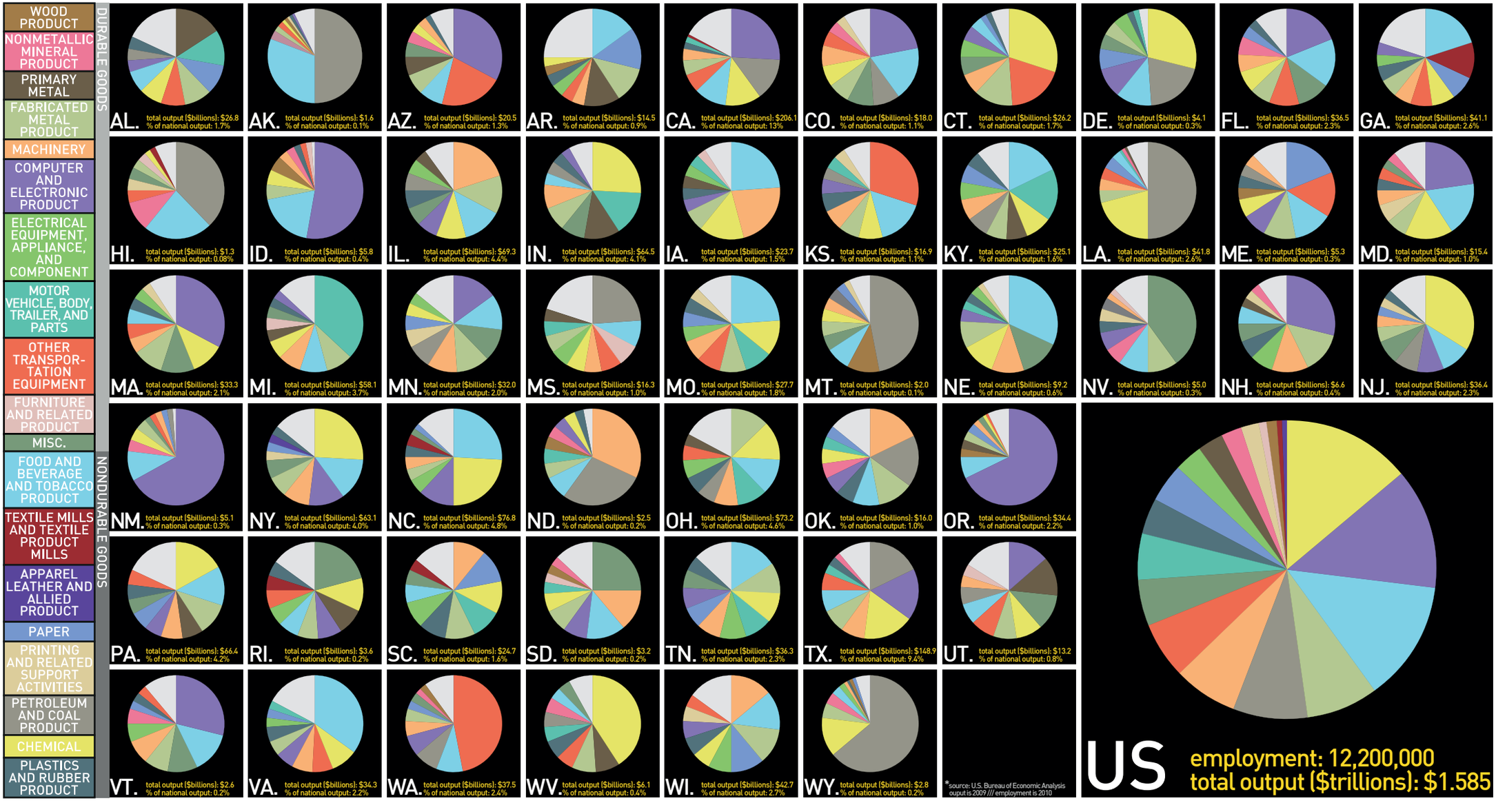


TOTAL MANUFACTURING EMPLOYMENT

= 25,000 MANUFACTURING EMPLOYEES



MANUFACTURING SECTORS ANALYSIS



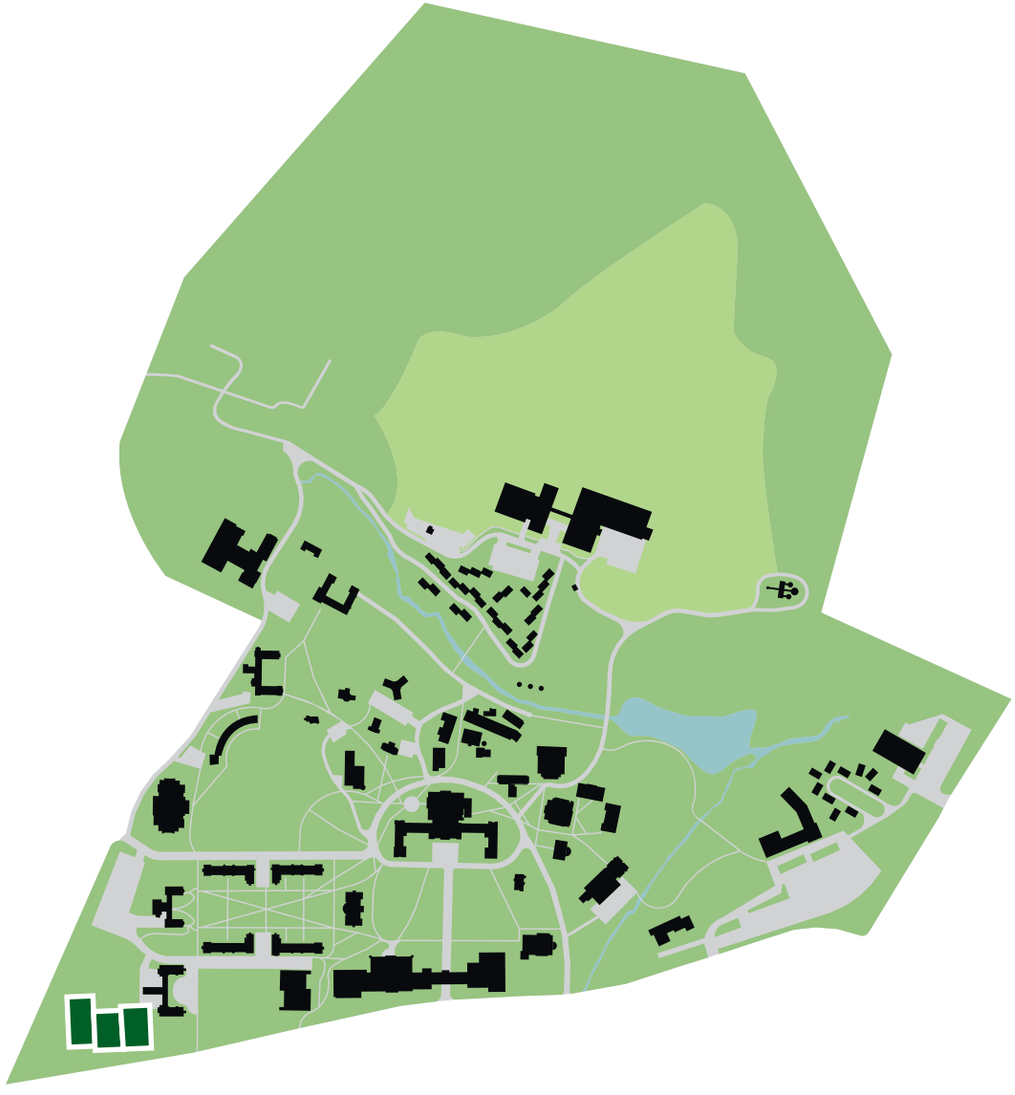
Appendix C: Mapped Landscapes of Production

Even in the 'age of the internet,' the landscapes of industrial production remain shrouded in mystery. Hard enough just to locate, let alone to truly understand. A Google search for "New Balance Factory," will undoubtedly produce twenty or so results for "New Balance Factory Stores" before even coming close to addressing the factories themselves. Understandably, businesses are infinitely more concerned with letting us know where to buy their products than they are with telling us how and where they are made. The roughly $1.6 trillion in total output and 12 million manufacturing employees are evidence that tangible goods are indeed being produced in our country. We know that the landscapes of production exist, but we don't quite know what they look like or how they operate.

This appendix is the result of arduous research attempting to pin down the various locations of production across America. I've managed to locate roughly sixty or so factories across the country that produce a plethora of goods ranging from pet food, to automobiles, to ceramic logs. After sifting through the numerous sites, I mapped both those that appear typical of the industrial typology as well as those that seem to exist as aberrations. As a whole, this small sampling provides a diverse account of the different sizes, shapes and arrangements that these landscapes utilize. Using Vassar Campus and a typical Manhattan block as a scale reference, the mapped landscapes are reproduced on the following pages.

scale references
TYPICAL NYC BLOCK
VASSAR COLLEGE
(Poughkeepsie, NY)

Scale reference,
(typical NYC block)



VASSAR COLLEGE
(Poughkeepsie, NY)

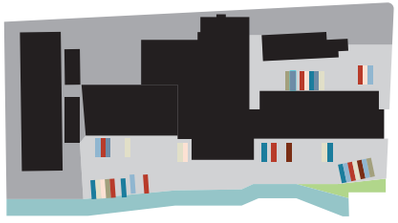
Scale reference,
(typical NYC block)

GM ASSEMBLY PLANT
(Fort Wayne, IN)

Scale reference,
(typical NYC block)

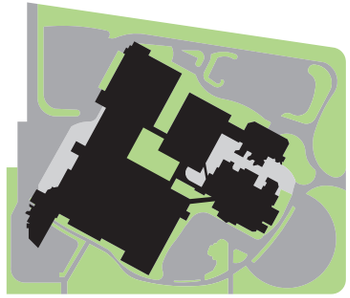
JIF PEANUT BUTTER PLANT
(Lexington, KY)

Scale reference,
(typical NYC block)



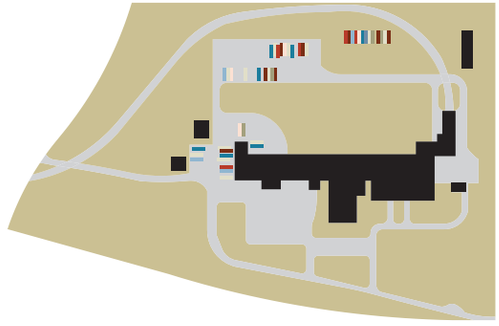
PEPSI BOTTLING PLANT
(Queens, NY)

Scale reference,
(typical NYC block)



IBM ALOHA CAMPUS
(Aloha, OR)

Scale reference,
(typical NYC block)



GENERAL MILLS PLANT
(Albuquerque, NM)

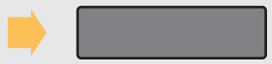
Scale reference,
(typical NYC block)

ORICK LUMBER MILL
(Orick, CA)

Scale reference,
(typical NYC block)

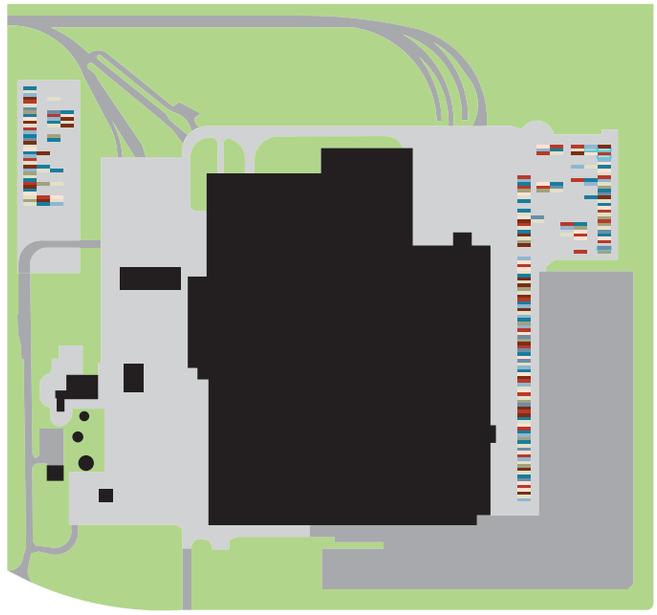
COLEMAN PLANT
(Wichita, KS)

Scale reference,
(typical NYC block)



METOMIC CORPORATION
(Chicago, IL)

Scale reference,
(typical NYC block)

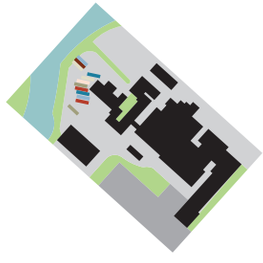


GM STAMPING PLANT
(Maroin, IN)

Scale reference,
(typical NYC block)

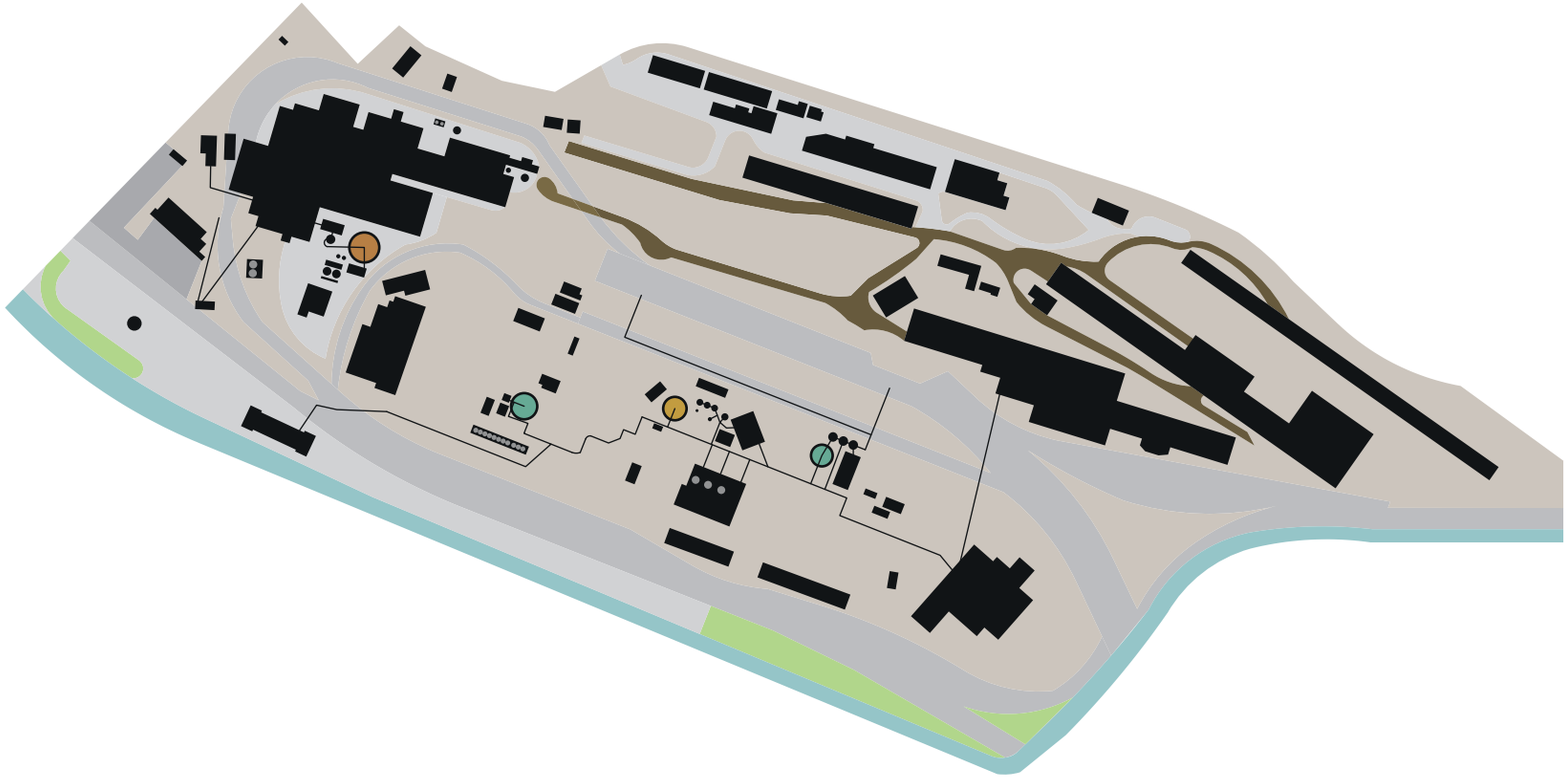
WROUGHT WASHER MANUFACTURING
(Milwaukee, WI)

Scale reference,
(typical NYC block)



STEINWAY PIANO FACTORY
(Queens, NY)

Scale reference,
(typical NYC block)

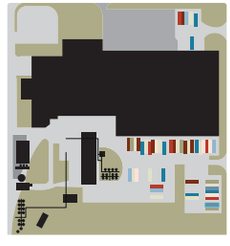


US STEEL EDGAR THOMSON PLANT
(Pittsburgh, PA)

Scale reference,
(typical NYC block)

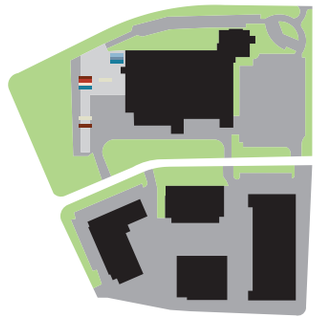
R.L. WINSTON ROD COMPANY
(Twin Bridges, MT)

Scale reference,
(typical NYC block)



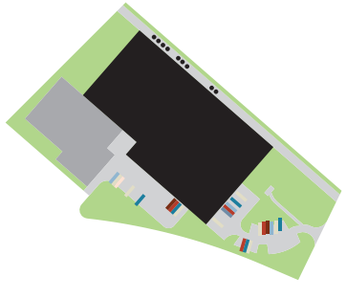
SHERWIN-WILLIAMS PAINT FACTORY
(Garland, TX)

Scale reference,
(typical NYC block)



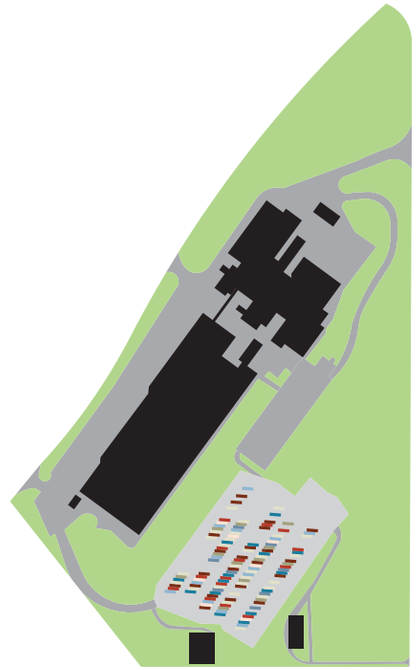
CAMPBELL'S SOUP PLANT
(Everett, WA)

Scale reference,
(typical NYC block)



SOLO CUP MANUFACTURER
(Conyers, GA)

Scale reference,
(typical NYC block)



FRISKIES PET FOOD FACTORY
(Crete, NE)

Scale reference,
(typical NYC block)

HARGROVE MANUFACTURING
(Sand Springs, OK)

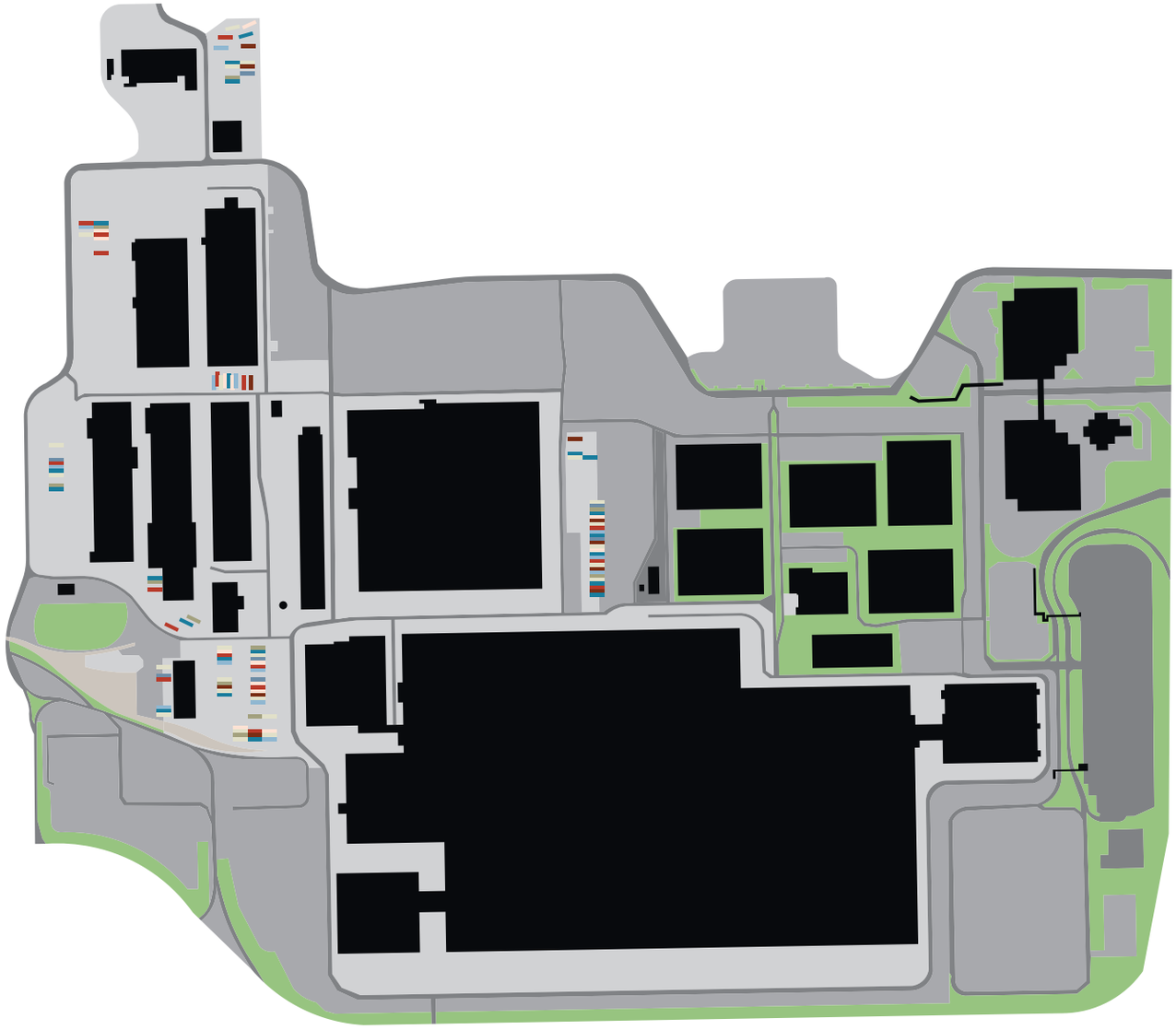
Scale reference,
(typical NYC block)

US STEEL IRVIN PLANT
(Pittsburgh, PA)

Scale reference,
(typical NYC block)

JOHN DEERE TRACTOR FACTORY
(Waterloo, IA)

Scale reference,
(typical NYC block)



BOEING FACTORY
(Everett, WA)

Appendix D: Industria's Industries, Attractions and Amenities

The fictitious and hyperbolic landscape of Industria has expanded from its humble beginnings as a single factory and two attractions in 1987 to the industrial megalopolis it is today. Currently, Industria is composed of twenty-two industries, sixteen attractions, six "amenities" and a large swathe of land for distribution and logistics. Each of these unique elements come together to create a singular landscape of industrial spectacle.

THE DISTRICTS

As it has grown over the past twenty-five years, Industria's 716 acre plot of land has been divided into ten districts, each with its own defining elements and unique characteristics.

LOWER DUNN
Named for the company that started it all, this district is home to the original DM Edgeton Assembly Plant and Conveyor Restaurant. It directly borders Interstate-0 on the southern border of Industria. Since 1987 Lower Dunn has gained only one new resident, a massive steel tubing and sheet manufacturer. Home to the two largest factories in Industria, Lower Dunn is dominated by a unique massivity that is rarely duplicated throughout the rest of Industria.

UPPER DUNN
Home to the third and fourth largest industries in Industria—a tractor engine manufacturer and a metal stamping facility—Upper Dunn owes its namesake to the culture of gigantism first established by Lower Dunn. Along with the popular Scale Village, the two industries of Upper Dunn anchor Industria's northwestern most border.

SMALL-SCALE WAY
The colossal disposition of Upper and Lower Dunn are contrasted by the relatively small stature that defines Small-Scale Way. What the district lacks in size, it more than makes up for in its diversity. Thirteen comparatively small-scale industries reside in the district producing a plethora of goods such as: piezoeclectrics, t-shirts, furniture, wind-up toys, pocket knives, speakers, wire and electric cables, paper, plastic molds, fabricated metal, specialized brass components, skateboard decks and fishing rods. The diversity of the district is magnified by the buildings' glass façades, which highlight the various forms of production occurring in the small, but exciting district.

RAILWAY TERRACE
One of the northern most districts in Industria, Railway Terrace is composed of two medium-scale industries: a paint factory and a potato chip factory. Its most distinctive attribute is its direct proximity to the rail infrastructures that support Industria.

LAKEVIEW DISTRICT
The newly constructed Lakeview District houses the remaining three industries of Industria: a chemical factory, flash memory factory and a beverage bottling plant (all considered medium-scale endeavors). Also in the district is Industria's hottest new attraction: Chem-Tours. The popularity of Chem-Tours along with Lakeview's proximity to Industria Lake makes it one of the hotbeds for tourists.

LOGISTICS AND DISTRIBUTION
Servicing all twenty-two of Industria's industries, Logistics and Distribution or L & D for short, is truly a site to behold. Located on the east end of Industria, L & D spans the entirety of the landscape from north to south. As a whole, the massive L & D district houses a large distribution center, logistic offices, rail and highway logistics, the IPRT Main Station and the Crane Simulator.

VISITATION ZONE
VZ for short, the Visitation Zone is the central hub for those visiting Industria. In the middle of VZ is the Industria Hotel. With over 2,400 rooms and direct access to the Souvenir Factory, Adopt-A-Product Center and massive parking structure, the VZ is the lynchpin of Industria tourism.

MECHANICAL GARDENS
Those seeking extended stays at the park often look to Mechanical Gardens. The district has a large apartment complex and a small hostel to service many of the park's employees as well as those looking to absorb the Industrian lifestyle for as long as possible. In addition to over 800 units, the apartment complex also offers rentable workspaces as well as two large cafeterias.

CONVEYOR STREET
Home to 42 retailers, an open-air market, the Industrial Theater and the Industria Vocational School, Conveyor Street is the commercial heart of Industria. The Vocational School offers training in various industrial sectors as well as offering free workshops and courses. Many of those who attend the school go on to open up their own shops and stands along Conveyor Street where they sell (among other things) the handmade products they learned to make while in Industria.

INDUSTRIAL VILLAGE
Industrial Village is the spectacular center to Industria. Home to eight astounding attractions, this district has given Industria its nickname as "Dollaropia's Industrial Playground." Its attractions include: the Mechanical Circus, Production Line rollercoaster, Machined Carousel, Silo Lake, Industrial Village Amphitheater, Observation Wheel, the Build-A-Product Facility and Industria's groundbreaking Manufacturing Museum.

THE INDUSTRIES

Industria is home to twenty-two distinct industries of various shapes and sizes. The manufacturers provide a wide range of industrially produced goods. The things produced on Industria's grounds are: DM automobiles, steel tubing and sheeting, piezoelectrics, t-shirts, furniture, wind-up toys, pocket knives, speakers, wire and electric cables, paper, plastic molds, fabricated metal, specialized brass components, skateboard decks, fishing rods, house paint, potato chips, tractor engines, formed metal, chemicals, flash memory, and bottled beverages.

THE ATTRACTIONS

Industria has sixteen diverse attractions that have brought the excitement of the theme park to the industrial typology.

CONVEYOR RESTAURANT

One of the first attractions at Industria. The restaurant is situated in the middle of DM's functioning assembly plant, combining world-class cuisine with a bustling industrial environment; a truly unique dining experience that can't be beat.

MECHANICAL CIRCUS

The Mechanical Circus is arguably Industria's most popular attraction. Opening in 2007, the Mechanical Circus combines the technological innovations of industrial production with the excitement of the circus. Audience members sit and watch as conveyors and automated machines perform a combination of industrial techniques and appropriated circus acts, including: juggling, product assembly, riveting, metal fabrication, and lion taming (amongst numerous others). Since 2008 the finale features the construction of a spherical oil silo. The construction process is completely automated and takes roughly thirty minutes. The silos built at the shows are subsequently inspected and shipped off to various oil refineries in Dollaropia where they are quickly put to work.

THE PRODUCTION LINE

The Production Line is Industria's only rollercoaster. Not for the squeamish, the rollercoaster boasts four large drops, six inversions and three corkscrews. The 6,200 feet of continuous track weave in and out of industrial silos that service nearby industries via subterranean pipelines.

MACHINED CAROUSEL

The Machined Carousel is Industria's take on the traditional "Merry-Go-Round." The carousel is a large circular conveyor belt that is scattered with retired automated machinery and vehicular components. Children and adults alike are encouraged to climb aboard the various industrial objects, sit back and enjoy the ride.

SILO LAKE

Silo Lake is a massive manmade cooling reservoir. The structure rises eight feet above the ground, but don't worry, the people at Industria have made sure that there is ample space for guests to sit at lake level and enjoy its cool waters. Visitors are encouraged to rent a paddleboat or jump on in; machines aren't the only ones who need to be cooled off!

INDUSTRIAL VILLAGE AMPHITHEATER

With seating for 15,232, the Industrial Village Amphitheater is the place to catch a cool concert, inspirational lecture or to see new manufacturing technologies at work during the annual Innovation Festival.

OBSERVATION WHEEL

With a 445-foot diameter and 32 capsules carrying 20 people each, the Industria Observation Wheel is the fourth largest in the world. Located at the center of Industrial Village and popularly referred to as the Industria Wheel, it is the parks most recognizable landmark. The ride lasts about thirty minutes taking guests to a height of 445 feet where they can see all of Industria bellow as well as the silhouette of Empire City's skyline twenty miles away.

BUILD-A-PRODUCT

The Build-A-Product facility is the perfect place for children visiting Industria. A simplified version of the Adopt-A-Product Program, the facility provides kids with hands on manufacturing experience. Drawing from small-scale precedents such as the "Penny-Press" and "Mold-A-Rama" machines, Build-A-Product allows children to construct products from scratch by utilizing a simple button and lever interface.

MANUFACTURING MUSEUM

The Manufacturing Museum is the best place to learn about the history of manufacturing, the economic structures that give it life and the technologies that sustain it. Resident industries are given space for their own exhibitions to go along with the thirty-two permanent educational and interactive displays.

INDUSTRIAL THEATER

The Industrial Theater anchors Conveyor Street and is the only movie theater in Industria. The theater regularly screens famous industrial themed movies. In an attempt to connect Industria with Dollaropian manufacturing as a whole, the theater streams live footage from an off site industry whenever a feature film is not playing. Guests are encouraged to come in and enjoy the productive methods of industries across the country.

ADOPT-A-PRODUCT CENTER

Attached to the Industria Hotel, the Adopt-A-Product Center is the headquarters of Industria's famous Adopt-A-Product Program. Those who take part in the program first go to the Center to fill out their questionnaires, which will help the staff determine their best possible industrial suitor. After being assigned an industry and a product, guests split their time between the workshops and

classrooms in the Center and the factories themselves before physically replicating the production process. Today thousands of products across the country can be found happily displaying their "Industria Adoption Tags." The facility itself boasts a large central atrium surrounded by sixty-three offices, fort-eight classrooms and workshops, five different cafes and a 254-seat auditorium.

SOUVENIR FACTORY

The Souvenir Factory is Industria's take on the traditional "gift shop." Instead of the common passive consumer experience, guests take an active role in producing their souvenirs. Guests pick out their desired souvenir after perusing "product menus" and display models. They are then guided to machines that—with a simple push of a button, pull of a lever and turn of a knob—produce the product right before their eyes.

CRANE SIMULATOR

Ever wonder what it would be like to sit in a crane a hundred feet above endless stretches of shipping containers ready to be loaded and sent across the globe? Well if you have, then the Crane Simulator is your kind of ride. Exactly what it sounds like, the Crane Simulator places guests at the controls of a massive crane. After choosing between the port and rail experiences, passengers are treated to all the thrills of zooming up and down, swinging side to side and loading and unloading that come with operating a crane.

IPRT MAIN STATION

IPRT's Main Station is the hub of Industria's Personal Rapid Transit system. The station itself has two restaurants, fourteen retailers and various exhibits highlighting the wonders of industrial logistics and distribution. Located next to the large public parking garage and with a line that connects visitors with nearby transit systems and offsite parking, the IPRT Main Station is often the first stop for visitors to Industria. With sixteen stops across Industria, the IPRT helps guests easily travel across 716 expansive acres, cutting through the interiors of functioning industries along its way allowing visitors to be completely immersed in the wonders of production.

SCALED VILLAGE

The Scaled Village is cozily located in the middle of the tractor engine factory in Upper Dunn. Manipulating the natural landscape around it, Scaled Village places guests at the same level as the massive industrial building that surrounds it. After a narrow trek to the top, guests find themselves within eight feet of the factory's roof, looking down through large windows and skylights at the assembly lines bellow. The Village is home to a large scaled model of Industria as well as a café, band shell and observation tower.

CHEM-TOURS

Opening in 2010, Chem-Tours is Industria's newest attraction. Utilizing the landscape provided by the chemical factory in the Lakeview District, guests throw on protective suites before enjoying a guided tour across an awe inspiring landscape of massive silos, snaking pipes and roaring exhaust fans.

INDUSTRIA MAP 2012

INDUSTRIA MAP 2012

INDUSTRIES

1 DUNN MOTOR COMPANY ASSEMBLY PLANT
2 STEEL TUBING AND SHEET MANUFACTURER
3 PIEZOELECTRICS
4 T-SHIRT MILL
5 FURNITURE WORKSHOP
6 WIND-UP TOY PRODUCER
7 POCKET KNIFE MANUFACTURER
8 DESKTOP SPEAKER FACTORY
9 WIRE AND ELECTRIC CABLE PRODUCER
10 PAPER MILL
11 PLASTIC MOLD PLANT
12 CUSTOM METAL FABRICATOR
13 SPECIALIZED BRASS COMPONENTS
14 SKATEBOARD DECK MANUFACTURER
15 FISHING ROD COMPANY
16 PAINT FACTORY
17 POTATO CHIP FACTORY
18 TRACTOR ENGINE MANUFACTURER
19 METAL STAMPING FACILITY
20 CHEMICAL FACTORY
21 FLASH MEMORY FACTORY
22 BEVERAGE BOTTLING PLANT

ATTRACTIONS

23 THE CONVEYOR RESTAURANT
24 MECHANICAL CIRCUS
25 THE PRODUCTION LINE
26 MACHINED CAROUSEL
27 SILO LAKE
28 INDUSTRIAL VILLAGE AMPHITHEATER
29 OBSERVATION WHEEL
30 CHILDREN'S BUILD-A-PRODUCT CENTER
31 MANUFACTURING MUSEUM
32 INDUSTRIAL THEATER
33 ADOPT-A-PRODUCT CENTER
34 SOUVENIR FACTORY
35 CRANE SIMULATOR
36 IPRT MAIN STATION
37 SCALED VILLAGE
38 CHEM-TOURS

AMENITIES

39 INDUSTRIA VOCATIONAL SCHOOL
40 CONVEYOR STREET RETAIL
41 MECHANICAL GARDENS APARTMENTS
42 FLEX-WORKSHOP SPACE
43 HOSTEL
44 INDUSTRIA HOTEL

LOGISTICS

45 DISTRIBUTION
46 DISTRIBUTION OFFICES

PHOTOGRAPHS OF INDUSTRIA

Father and Son on Chem-Tours (circa 2010)

Couple Dines at Conveyor

Grand Finale at the Mechanical Circus

IPRT Zips Through a Factory

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*All statistical data is from either the U.S. Census Bureau or the U.S. Bureau of Economic Analysis

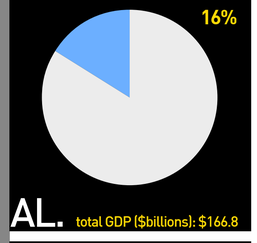
While activating a seemingly infinite number of new geographies and allowing for economic diversification, the shift from **Fordism** to **Flexible Accumulation** had noticeable drawbacks as far as the everyday consumer was concerned. The shift necessitated a complication of the methods of production making it harder to trace the lineage of manufactured goods. As seen bellow, the production of a car (🚗) under **Fordism** was once geographically anchored in, for instance, Detroit MI. In a single location raw materials were converted to a marketable commodity. Under a regime of **Flexible Accumulation**, centralization goes out the window as the anchor is drawn and production is fractured. A car is now manufactured in bits and pieces across various geographies. The parts are stored in intermediary storage facilities and distribution centers only to come together "just-in-time" to be assembled in yet another location into the car that will be shipped to market.

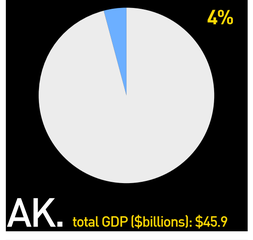
RAW MATERIALS
GLASS & PLASTIC MANUFACTURER (HOUSTON, TX)
STORAGE FACILITY (DALLAS, TX)
RAW MATERIALS
ELECTRONIC COMPONENT MANUFACTURER (MEMPHIS, TN)
RAW MATERIALS
STEEL REFINERY (PITTSBURGH, PA)
STORAGE FACILITY (TOPEKA, KS)
STORAGE FACILITY (LEXINGTON, KY)
HEAD LIGHT MANUFACTURER (GREENBAY, WI)
CAR INTERIOR MANUFACTURER (WORCESTER, MA)
ON-BOARD CPU MANUFACTURER (SANTA CLARA, CA)
STORAGE FACILITY (WATERLOO, IA)
CAR ENGINE MANUFACTURER (EVANSVILLE, IN)
STEEL FRAME MANUFACTURER (MINNEAPOLIS, MN)
STORAGE FACILITY (ROCKFORD, IL)
CAR DOOR MANUFACTURER (CLEVELAND, OH)
STORAGE FACILITY (CINCINNATI, OH)
STORAGE FACILITY (RALEIGH, NC)
CAR ASSEMBLY PLANT (DETROIT, MI)
STORAGE FACILITY (FLINT, MI)
CARS TO MARKET
RAW MATERIALS
AUTOMOBILE FACTORY (DETROIT, MI)
CARS TO MARKET

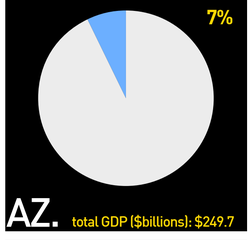
FORDISM

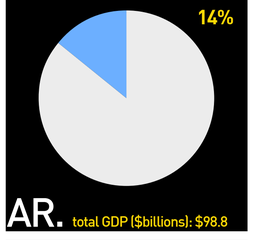
FLEXIBLE ACCUMULATION

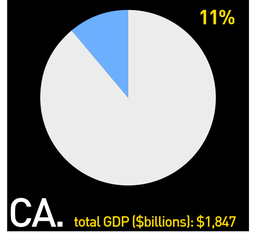
TOTAL MANUFACTURING OUTPUT vs. TOTAL GDP

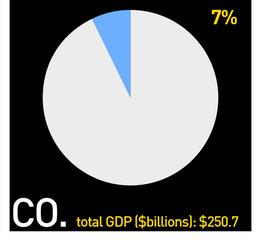


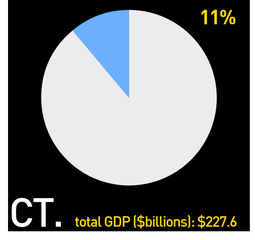


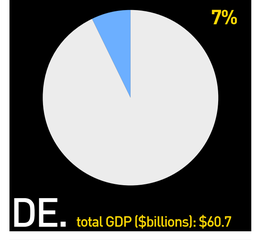


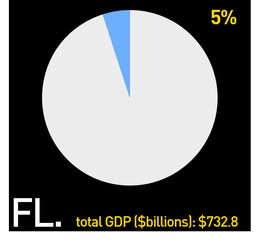


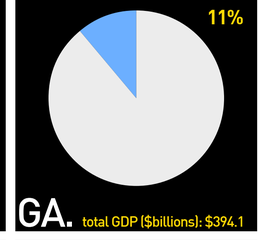


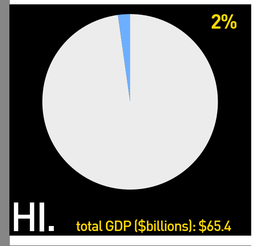


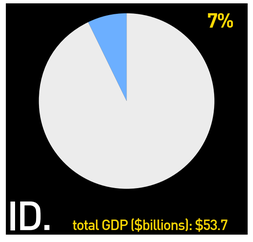


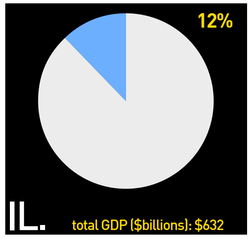


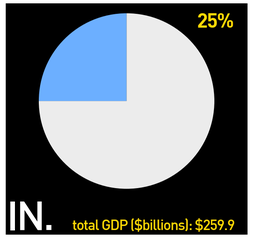


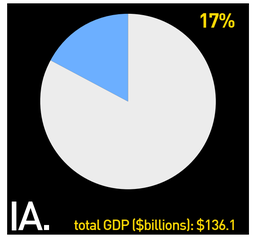


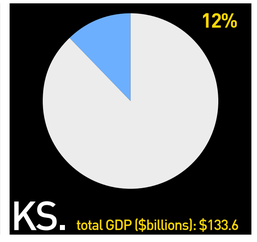


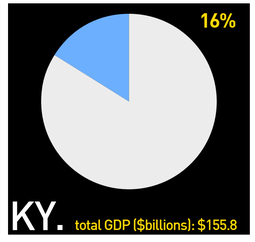


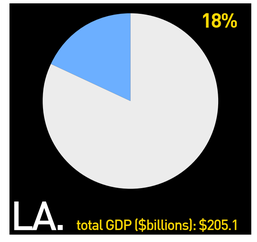


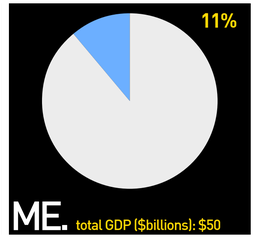


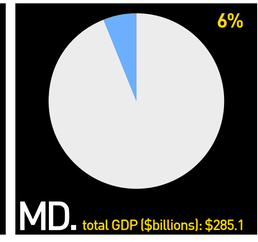


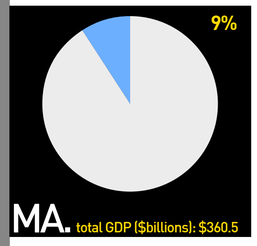


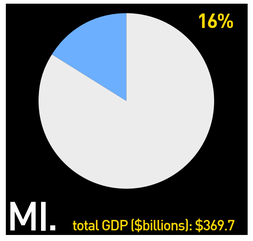


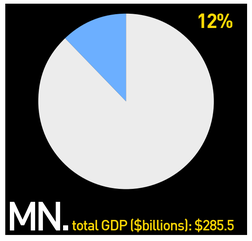


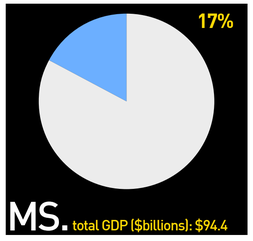


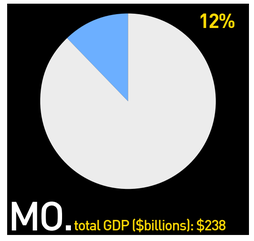


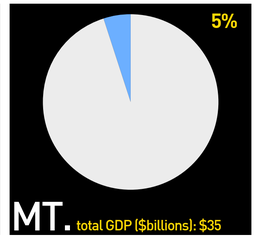


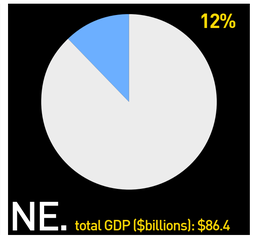


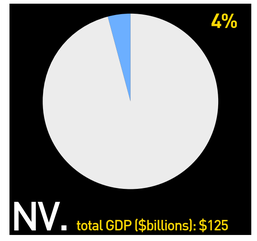


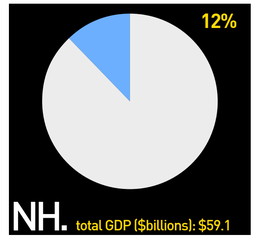


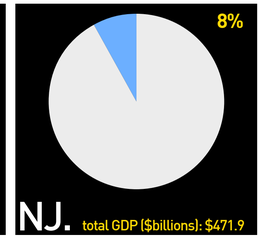


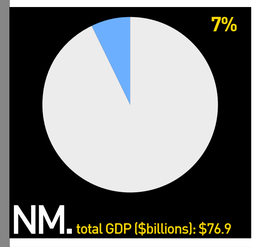


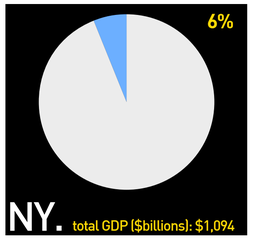


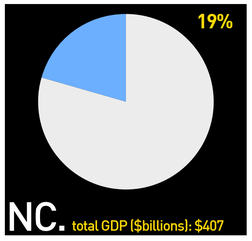


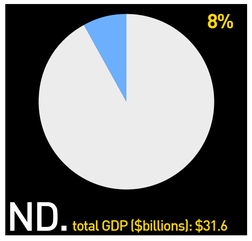


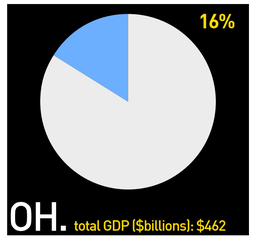


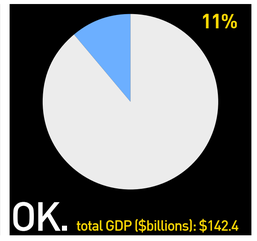


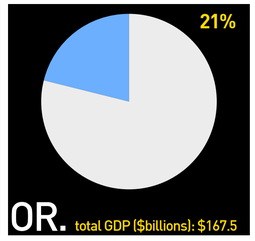


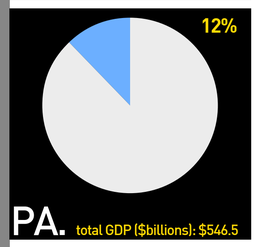


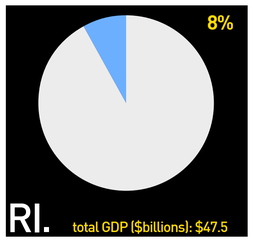


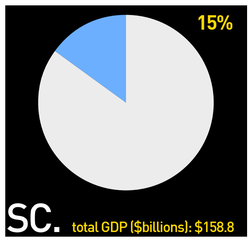


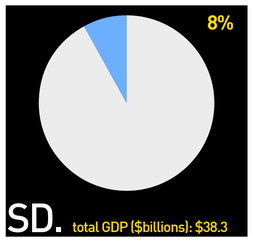


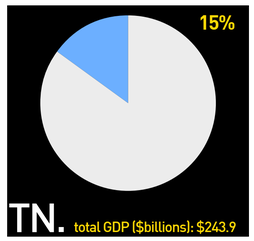


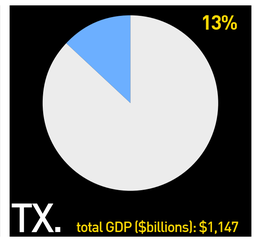


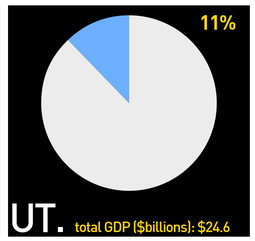


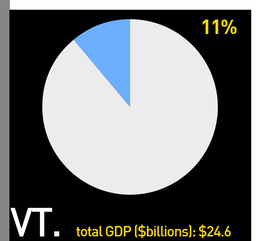


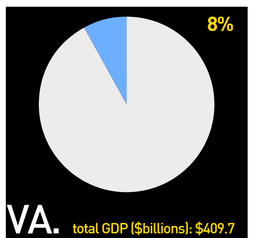


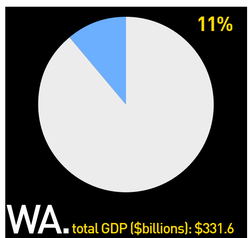


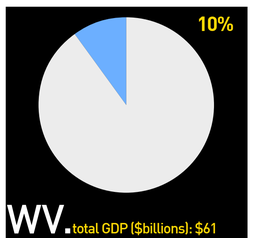


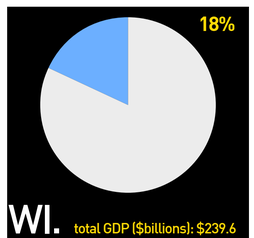


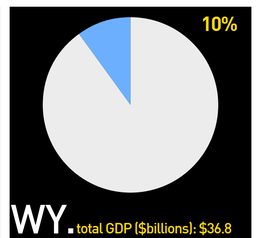




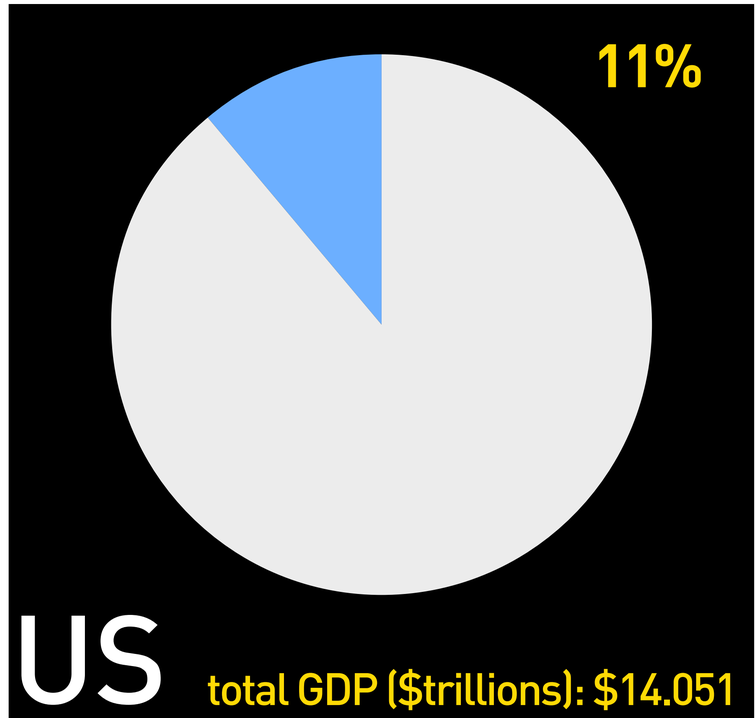




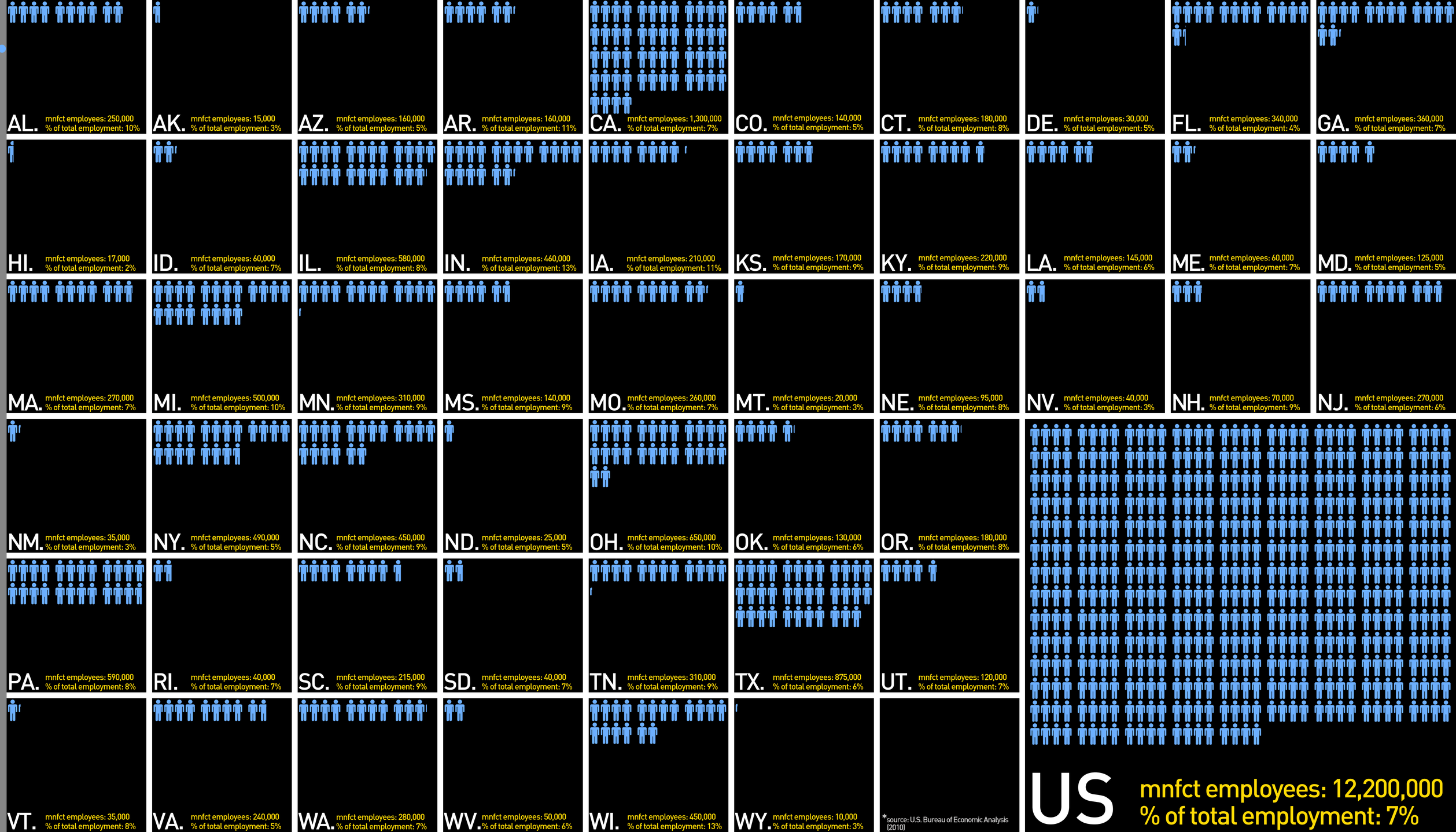


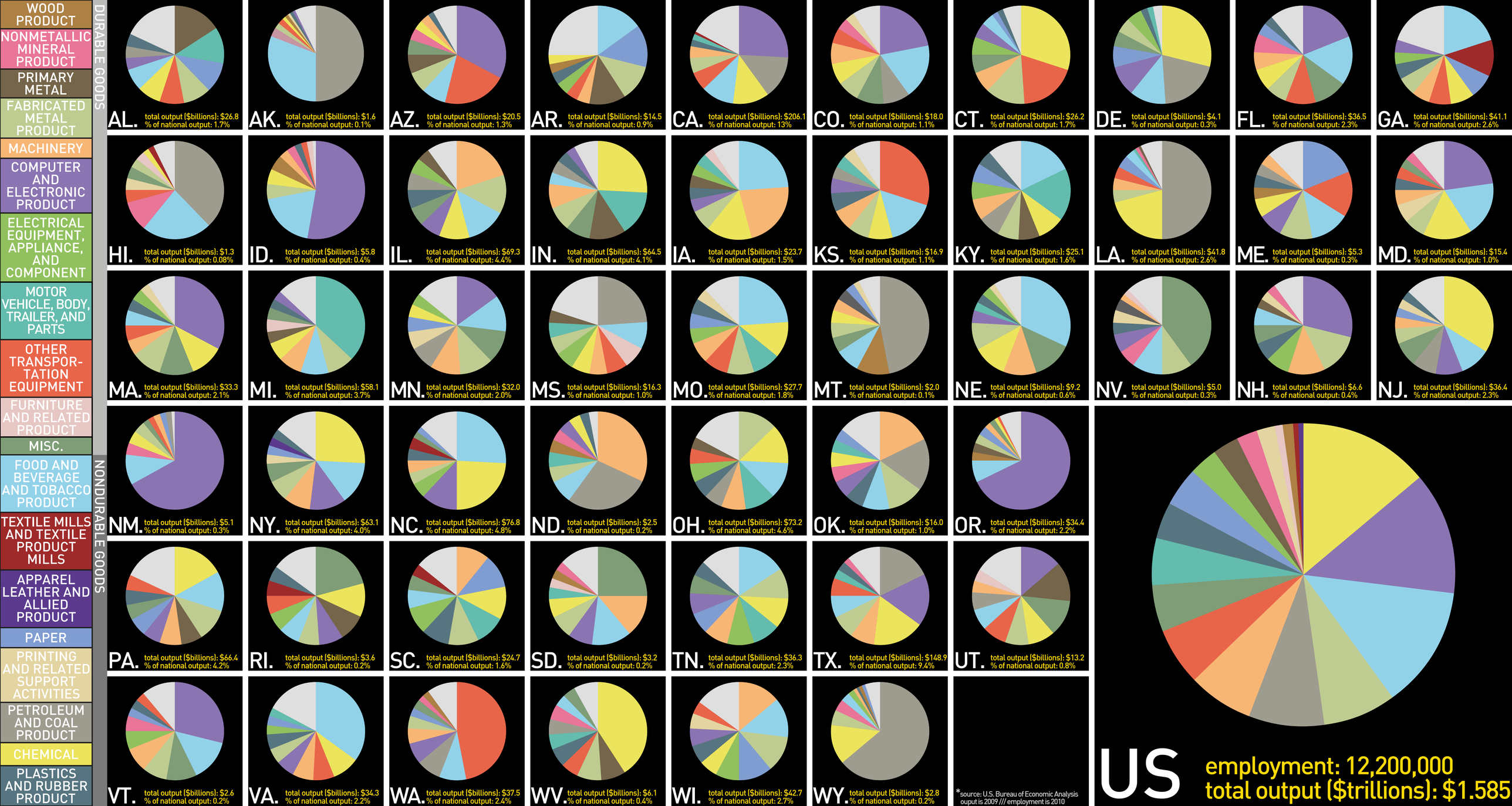


*source: U.S. Bureau of Economic Analysis (2009)



= 25,000 MANUFACTURING EMPLOYEES




WOOD PRODUCT
NONMETALLIC MINERAL PRODUCT
PRIMARY METAL
FABRICATED METAL PRODUCT
MACHINERY
COMPUTER AND ELECTRONIC PRODUCT
ELECTRICAL EQUIPMENT, APPLIANCE, AND COMPONENT
MOTOR VEHICLE, BODY, TRAILER, AND PARTS
OTHER TRANSPORTATION EQUIPMENT
FURNITURE AND RELATED PRODUCT
MISC.
FOOD AND BEVERAGE AND TOBACCO PRODUCT
TEXTILE MILLS AND TEXTILE PRODUCT MILLS
APPAREL LEATHER AND ALLIED PRODUCT
PAPER
PRINTING AND RELATED SUPPORT ACTIVITIES
PETROLEUM AND COAL PRODUCT
CHEMICAL
PLASTICS AND RUBBER PRODUCT
DURABLE GOODS
NONDURABLE GOODS
AL. total output ($billions): $26.8 % of national output: 1.7%
AK. total output ($billions): $1.6 % of national output: 0.1%
AZ. total output ($billions): $20.5 % of national output: 1.3%
AR. total output ($billions): $14.5 % of national output: 0.9%
CA. total output ($billions): $206.1 % of national output: 13%
CO. total output ($billions): $18.0 % of national output: 1.1%
CT. total output ($billions): $26.2 % of national output: 1.7%
DE. total output ($billions): $4.1 % of national output: 0.3%
FL. total output ($billions): $36.5 % of national output: 2.3%
GA. total output ($billions): $41.1 % of national output: 2.6%
HI. total output ($billions): $1.3 % of national output: 0.08%
ID. total output ($billions): $5.8 % of national output: 0.4%
IL. total output ($billions): $69.3 % of national output: 4.4%
IN. total output ($billions): $64.5 % of national output: 4.1%
IA. total output ($billions): $23.7 % of national output: 1.5%
KS. total output ($billions): $16.9 % of national output: 1.1%
KY. total output ($billions): $25.1 % of national output: 1.6%
LA. total output ($billions): $41.8 % of national output: 2.6%
ME. total output ($billions): $5.3 % of national output: 0.3%
MD. total output ($billions): $15.4 % of national output: 1.0%
MA. total output ($billions): $33.3 % of national output: 2.1%
MI. total output ($billions): $58.1 % of national output: 3.7%
MN. total output ($billions): $32.0 % of national output: 2.0%
MS. total output ($billions): $16.3 % of national output: 1.0%
MO. total output ($billions): $27.7 % of national output: 1.8%
MT. total output ($billions): $2.0 % of national output: 0.1%
NE. total output ($billions): $9.2 % of national output: 0.6%
NV. total output ($billions): $5.0 % of national output: 0.3%
NH. total output ($billions): $6.6 % of national output: 0.4%
NJ. total output ($billions): $36.4 % of national output: 2.3%
NM. total output ($billions): $5.1 % of national output: 0.3%
NY. total output ($billions): $63.1 % of national output: 4.0%
NC. total output ($billions): $76.8 % of national output: 4.8%
ND. total output ($billions): $2.5 % of national output: 0.2%
OH. total output ($billions): $73.2 % of national output: 4.6%
OK. total output ($billions): $16.0 % of national output: 1.0%
OR. total output ($billions): $34.4 % of national output: 2.2%
PA. total output ($billions): $66.4 % of national output: 4.2%
RI. total output ($billions): $3.6 % of national output: 0.2%
SC. total output ($billions): $24.7 % of national output: 1.6%
SD. total output ($billions): $3.2 % of national output: 0.2%
TN. total output ($billions): $36.3 % of national output: 2.3%
TX. total output ($billions): $148.9 % of national output: 9.4%
UT. total output ($billions): $13.2 % of national output: 0.8%
VT. total output ($billions): $2.6 % of national output: 0.2%
VA. total output ($billions): $34.3 % of national output: 2.2%
WA. total output ($billions): $37.5 % of national output: 2.4%
WV. total output ($billions): $6.1 % of national output: 0.4%
WI. total output ($billions): $42.7 % of national output: 2.7%
WY. total output ($billions): $2.8 % of national output: 0.2%
*source: U.S. Bureau of Economic Analysis ouput is 2009 /// employment is 2010
US
employment: 12,200,000
total output ($trillions): $1.585

INDUSTRIES

1 DUNN MOTOR COMPANY ASSEMBLY PLANT
2 STEEL TUBING AND SHEET MANUFACTURER
3 PIEZOELECTRICS
4 T-SHIRT MILL
5 FURNITURE WORKSHOP
6 WIND-UP TOY PRODUCER
7 POCKET KNIFE MANUFACTURER
8 DESKTOP SPEAKER FACTORY
9 WIRE AND ELECTRIC CABLE PRODUCER
10 PAPER MILL
11 PLASTIC MOLD PLANT
12 CUSTOM METAL FABRICATOR
13 SPECIALIZED BRASS COMPONENTS
14 SKATEBOARD DECK MANUFACTURER
15 FISHING ROD COMPANY
16 PAINT FACTORY
17 POTATO CHIP FACTORY
18 TRACTOR ENGINE MANUFACTURER
19 METAL STAMPING FACILITY
20 CHEMICAL FACTORY
21 FLASH MEMORY FACTORY
22 BEVERAGE BOTTLING PLANT

ATTRACTIONS

23 THE CONVEYOR RESTAURANT
24 MECHANICAL CIRCUS
25 THE PRODUCTION LINE
26 MACHINED CAROUSEL
27 SILO LAKE
28 INDUSTRIAL VILLLAGE AMPHITHEATER
29 OBSERVATION WHEEL
30 CHILDREN'S BUILD-A-PRODUCT CENTER
31 MANUFACTURING MUSEUM
32 INDUSTRIAL THEATER
33 ADOPT-A-PRODUCT CENTER
34 SOUVENIR FACTORY
35 CRANE SIMULATOR
36 IPRT MAiN STATION
37 SCALED VILLAGE
38 CHEM-TOURS

AMENITIES

39 INDUSTRIA VOCATIONAL SCHOOL
40 COMMERCIAL DISTRICT
41 MECHANICAL GARDENS APARTMENTS`
42 FLEX-WORKSHOP SPACE
43 HOSTEL
44 INDUSTRIA HOTEL

LOGISTICS

45 DISTRIBUTION
46 DISTRIBUTION OFFICES

IPRT station